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VOL. XIX. NO. II

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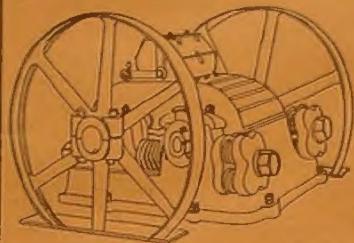
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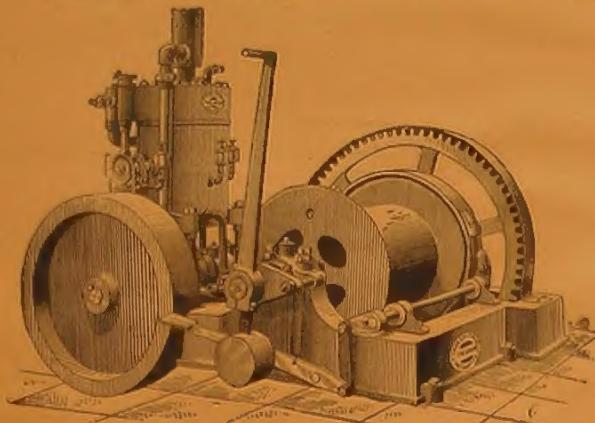
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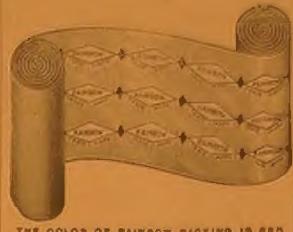
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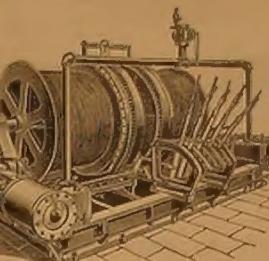
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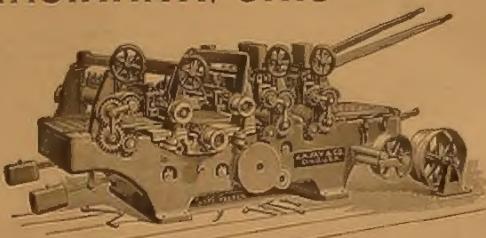
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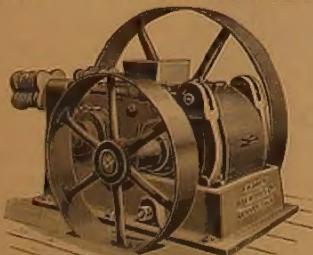
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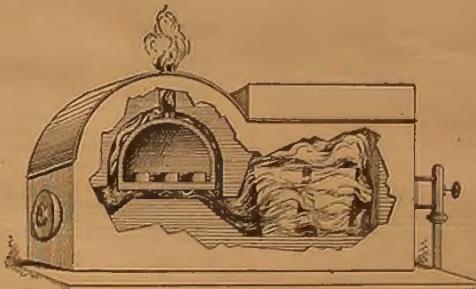
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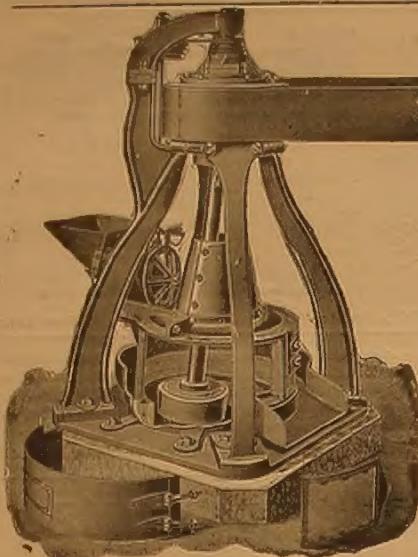
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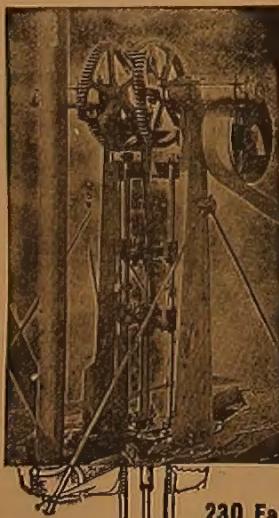
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MILLING OF CUSTOM ORES.

The milling of custom ores in the Western United States is a large branch of the mining industry of that section of the country. It is not regulated or controlled by any federal or state laws, and, in consequence, the small mine owner has to trust to his own sampling as a check, and also to the honesty of the mill owner and his employees, to receive the full returns from the ore which he has had treated at the custom mill.

When the mill owner is strictly honest, and is also blessed with the services of honest employees, there is no cause of complaint, but, unfortunately, this happy condition of affairs is not always the case, hence the necessity for having the industry regulated by law, so as to protect the small mine owner. Every mine owner knows the difficulty of attaining a correct sample of the value of gold ores, and for this reason the mill owner has occasion to exercise all possible care and precautions to protect his customer against the possibility of dishonest employees, defrauding his client. The most approved form of sampling machines ought therefore to be a necessary part of all mills doing custom work. To run the ore through the mill without sampling, and make returns of the amount of gold saved, is no proper way of doing custom milling, as it does not show the amount of gold lost in the tailings. The milling of custom ore can consequently be done for three or more reasons: first, to obtain returns from the ore mined; and, second, to ascertain the value as a free milling proposition of that ore; and, third, to ascertain the best manner of treating a new class of ore. For these reasons, careful sampling and honest work are necessary. The whole system of conducting this branch of the mining industry is conducted on such a loose, go-as-you-please, style in too many instances, that it requires wide discussion, so as to arrive at the best manner of regulating its operation.

FOREST RESERVE INSPECTION.

During the past two weeks, an extensive forest fire has been burning in that part of the Los Angeles county reservation situated between Strawberry Mountain on the west and Barley Flats on the east, and on the south bank of the Big Tejunga water shed, which has resulted in the destruction of many miles of valuable pine timber.

The origin of the fires is too often caused

by campers lighting fire at noon for cooking purposes when the wind is high in that district, and in not putting the fire out after the noon meal is cooked. The result is that the largest body of pine in the center of the reservation is now almost all destroyed. The inspector, Mr. Allan and six men under him were reported in the local papers, prior to this, to have put the fires out which were burning for some weeks prior to the present outburst, but such was not the case, for the present fire is but the continuation of that which was reported to have been extinguished, for so we are informed by a miner who has watched its progress from the district north of the Big Tejunga, opposite to where the destruction was done. In this matter, we may ask the question, if the government issues orders and pays men to fight forest fires at twenty-five cents an hour per man, how does it happen that the inspector has no funds or power to prosecute sheepherders who have trespassed on the reservation since spring in the Little and Big Rock Creek districts, and are there now, with several thousand sheep? It is to the miners' interest to have both the timber and vegetation protected, as the water supply at present is not sufficient to admit of milling ore, and just sufficient at many springs for household purposes.

The direction of the wind in the mountains at this season of the year is from one direction in the day time and from a contrary direction at night, so that by starting a fire in the evening, the forest fire can be made to burn itself out, which is the best way to control its course on the day following. There is something conspicuously wanting in our Forest Reservation Inspection other than the item of salary.

MARKING PATENTED CLAIMS.

We have referred in former issues to the injury done to the country when our government deeded mining property to ranchers, or as grants, and in not retaining control of all minerals, for the future interests of the people. A graphite mining property, which is located on an old Mexican Grant, was purchased and operated by a company, came into the hands of a bank, which now holds it, and have not operated it since that time. A party chanced to see the property, and, not being aware that it was patented ground, made a mineral location on it in April last, and, in ignorance of the true condition of affairs, has operated it since that time. There being no notice on the property as to ownership, or fence or buildings, the mistake was easily made, although he made diligent inquiry in the district, and shows the necessity why all patented mining property should be marked by signboard, or fence, or in such a manner that no innocent party may lose his time and capital in developing that to which he cannot obtain the right to operate or perfect his title to it. Had the property remained in the hands of the government, his industry would have been encouraged and rewarded by granting him the right to work it, but the bank, with all its idle capital on hand, and still owning the claim, kept the development of the country back, through our having a dishonest system of mineral ownership by individuals and rich corporations, which do not in all cases act as the government would, if it owned the minerals, so as to operate in the interests of labor invested in working minerals.

Prospectors and miners are continually put to unnecessary expense, on account of the

careless system we work under, of allowing patented mines and mineral ground to remain without signboards or fences, in addition to the evidences of survey left by surveyors on such property, which survey posts and markings are to a large extent not understood, except by the miner and prospector of long experience, therefore there is urgent call for a better system of marking patented mines and claims.

WATER STORAGE RESERVOIRS.

To the mining interests of the west and southwest, the construction of large water storage reservoirs by the Federal Government at suitable places in the mountains is as important a piece of work to this industry as is the building of harbors to the sea coast and shipping interests. It is a matter of national importance in rendering the country fit for habitation, and therefore strictly within the sphere of the government to undertake, as it has been so considered by the government in Australia under similar climatic conditions to ours. Our government has already made exhaustive surveys of such locations through the efforts of the staff of the Geological Survey, and it is highly desirable that this excellent work should become available for irrigation and mining use at as early a date as possible. The next Irrigation Congress is to be held at Cheyenne, Wyoming, on the 1st and 3rd of September, when this matter ought to be made the chief topic for discussion and action, so as to have government aid in the work at as early a date as possible. As large a delegation as possible is necessary from all sections of the country. The mayor of every city of less than 25,000 can appoint one delegate, and of over 25,000 two delegates. Each commercial body, irrigation, agricultural and horticultural society and irrigation company is entitled to one delegate.

The year 1898 is bidding fair to be the banner year for water development in the southwest, but the extent to which the large storage reservoirs can be built with Federal aid would far surpass it, and it is the duty of all citizens to do all in their power to help the cause along, if for no other cause than that of furthering their own best interests. No public movement can aid the development of the west to such an extent as this necessary measure.

IN PROCESS OF SOLUTION.

Events are solving the money problem more rapidly than is generally supposed. The apparent necessity for the gold standard is disappearing, as is also that of retiring the greenbacks and treasury notes.

For several years trade balances were adverse to this country, which depleted our gold reserves, and as when greenbacks were redeemed, they could be and were put out again, their redemption and reissue constituted what was termed an "endless chain," and the demand for gold, to pay foreign indebtedness imposed an embarrassment and burden upon the government. The demand for gold threatened to force it to a premium, which would embarrass business as well as government. It was thought, too, that giving silver an equal status with gold, as a medium of exchange in domestic transactions, would be invidious, as the demand for gold would carry it to a premium, and would make silver, even in domestic trade, an inferior money.

In the last fiscal year, the balance of trade

in our favor was \$600,000,000, which enabled our people to pay interest on bonds on foreign investments in this country, or, in other words, has caused the tide of gold to run heavily over our way, which is not only depleatory of the gold resources of foreign countries but removes the demand for gold in this country. While, as a rule, we have exported more agricultural products than we have imported, and that condition is likely to continue, we have during the last fiscal year exported manufactures in excess of imports to the extent of \$40,000,000, which presages a certainty that hereafter trade balances will be on our side at all times, except when conditions are very exceptional, and such conditions are not likely to occur.

Continual depletion of the gold resources of foreign countries, if it continue to any great extent, will force them to adopt an additional standard, which will naturally be that of silver, so long as the circulating medium rests upon a metallic basis. The gold of the world, devoted to monetary uses, is put down at \$4,000,000,000, and should we withdraw from the European stock but \$100,000,000 per annum, there would be left no gold in the vaults of European banks and treasuries at the end of thirty years, and should our balances of last year keep up for five years, Europe would have no gold except in ornaments, and gold would soon be so plentiful in this country that there would be no object in making it the sole measure of value. The energy with which the gold standard has been urged was stimulated by the opportunity which existed to make it especially advantageous to its possessors. That opportunity has passed away, or, at least, is rapidly passing away.

Our customs duties and internal taxes are all payable at the option of the payers in any kind of our circulating medium, and, hence, there is no demand for gold for these purposes, so that hereafter it is improbable that legislation in favor of gold will be sought. Gold is nowhere money of large circulation outside of California, and its extensive use here is partly from local sentiment, and partly because other kinds of money have not been plentiful. Gold never was intended for general circulation, for it is too scarce, and, consequently, too valuable to be worn out by continuous handling.

Though in the course of international trade we seem determined to draw money from Europe in considerable sums, it will be a long time, if ever, before our stock will be so great that it will answer for the sole metallic base for such a volume of paper money as the country will need. It will take a considerable sum annually to meet interest and dividends due to foreigners, and to pay the expenses of American tourists abroad; but we have reached a state which seems destined to continue, when gold can not have such a value as will stimulate exertions to make it a standard to the exclusion of silver, that is to say, there will be no such condition that will force it to a premium, if its functions in our domestic commerce are not made greater by law than those of other kinds of money.

Lindheim & Co. have decided to put in a modern quicksilver furnace at their mine, at Agua Fria, Brewster county, Texas, and abandon the retorts now in use, and which have turned out 4000 pounds of the metal.

"Your JOURNAL is a Dandy!" so writes a prominent mine owner of Sabinal, Mexico, to the MINING AND METALLURGICAL JOURNAL.

Patents.

Messrs. Townsend Bros., solicitors of patents, Los Angeles, California, report the following recent patents of interest to mining men:

August 2nd. Steam ore stamp, two patents, David Cole, Chicago, Ills., assignor to Gates Iron Works of Illinois. These inventions relate to means whereby high pressure is admitted beneath the pistons, low pressure is admitted above the pistons, and each low pressure chamber is exhausted when its respective piston nearly reaches its lowest position.

July 26th. Hose attaching device for rock drills, P. H. Hearndon, San Francisco. A bent stop-cock, having at one end round non-angular screw threads raised above its surface, and a compression clamp adapted to surround the hose adjacent to the threads. The round threads prevent the hose from being cut, but allow the nozzle to be screwed tightly into the hose to thereby prevent leakage of air.

July 26th: Process of producing magnetic oxide of iron, R. H. Peak, Orlando, Florida. Finely pulverized dry ferric oxide is heated to a temperature somewhat below its fusing point, constantly agitated for some time, the air being excluded, and is then allowed to cool in its own gases while the air is excluded.

July 26th. Magnetic ore separator, G. J. Crean, Montreal, Canada. A wheel with a thin, projecting, non-magnetic rim is arranged to revolve on a shaft; stationary magnets are arranged inside of the rim, extending on one side from the mid line of the wheel to the bottom. A hopper is arranged to feed the ore against the outside of the rim at a point near the upper end of the line of magnets, the iron being held to the rim by the magnets, the weight of the iron causing the wheel to revolve; the non magnetic ore falls into one hopper, while the iron is carried down to the end of the line of magnets and drops into another hopper.

July 26th. Process of treating complex ores, John Armstrong, London, England. The process of treating rebellious sulphide ores or mattes, which consists in heating them by a reducing flame to a red heat with a mixture of carbon and alkali, salt and lime—in proportion to form alkali metal, thereby effecting the reduction of the ore by the nascent alkali metal and tapping out the metal.

July 19th. Ore car, Geo. E. Truax, Denver. The invention consists essentially in providing a plate having an annular boss, through which passes the bolt, which fastens to the car the lever which locks the door shut, so that the lever is thus fulcrumed on the boss instead of the bolt.

July 19th. Crushing machine, T. L. Sturtevant, Quincy, and T. J. Sturtevant, Framingham, Mass. A rock breaker having an adjustable tension behind one of the jaws, so that when the pressure exceeds a certain predetermined amount, the tension will yield to avoid injury to the machine.

July 19th. Sizing machine for gold or like metals, Wm. Gray, Lincoln, Nebraska. A sizing machine comprising a box having discharge openings in front and rear, and a series of reversely inclined screens and pans, said screens having successively elongated meshes and discharging through the openings in front and rear into independent receptacles, handle bars extending front and rear, and flexible supporting legs, adapted to allow the box to be shaken sidewise.

July 19th. Hydraulic separator for treat-

ing mixed minerals, W. L. Lockhard, London, England, assignor to the Automatic Gem and Gold Separator Syndicate, (Limited), same place. A hopper feeds the wet material onto a cone, which spreads it out and delivers it to an annular trough, having a discharge beneath and inside the cone: by means of a current of water the lighter material is discharged over the top of the trough, while the heavy particles pass downward into locked receptacles.

The latest thing out is the publication of *El Boletín Comercial*, the organ of the Latin-American Club of St. Louis, Mo., and Foreign Trade Association. It is a monthly journal of twelve pages, and from appearances of the first number is phenomenally well supported, having representative manufacturing interests as its supporters. *The Commercial Bulletin* is entirely in Spanish, and contains an excellent selection of newsy items.

In their salutatory, *The Boletín Comercial* says:

"Al publicar hoy nuestro primer número de *El Boletín Comercial*, lo hacemos con el cordial deseo de que se estrechen cada vez mas las relaciones comerciales entre St. Louis y la América Latina. La experiencia que hasta aquí han tenido nuestros comerciantes con México, la América Central, Colombia y Venezuela ha sido del mas satisfactorio carácter y muy justo es que mencionemos el elevado tono del honor comercial existente entre los comerciantes de esos países nuestros vecinos del Sur."

Reynolds' Hand Book of Mining Laws of The United States and Canada, pertaining to Alaska, The Yukon District, British Columbia and Ontario has just been published by the W. B. Conkey Company of Chicago and New York. It is a very neat pocket edition of 360 pages, well bound in cloth, flexible covers, and is beautifully printed. Mr. Joseph Ward Reynolds, the author, is a barrister of renown, and has a large practice at the Minnesota Bar. Where there is conflict of authority upon any question, he has not hesitated to state what he regards as the correct principle. In short, it was endeavored to make this work a safe and reliable guide to the one interested or expected to be interested in mines or mining in the United States or Canada, and especially in Alaska, Northwest Territories, British Columbia and Ontario. No miner should be without a copy of it.

The advance in the price of lead, due to the duty on lead ores imported from foreign countries, has materially benefited our lead producers. The price of lead prior to the present tariff regulation was averaging in the neighborhood of \$2.75 per cwt., whereas today lead is about \$3.50 per cwt., and will probably reach \$4 per cwt. in the near future. With this difference of \$15 a ton, or upwards, it naturally means a great deal of encouragement to our lead producers. It also materially affects the large lead productions of Idaho and Utah, as most of these ores are smelted in Colorado, thereby benefiting our local institutions.

The Tramway mine, in Butte, Mont., adjoins the Snohomish, and which passed into the possession of F. Aug. Heinze some time ago, has been leased to Mike Nueman, who will sink 100 feet additional on the mine under the terms of his lease. The property has never been developed to any extent.

SYSTEM IN THE LOCATION OF MINING DISTRICTS.

THRO. F. VAN WAGENEN, E. M.

I desire, through the medium of the JOURNAL to call attention to some interesting facts as to the relative situation of those localities in the Western United States where metalliferous ores occur, and to that end have prepared the accompanying map, which covers the country from about the 102° west longitude to the Pacific. This area embraces all the distinctive mining states and territories and the region of the Black Hills in South Dakota. A vast amount of detail usually found on maps, such as minor political sub-divisions, commercial towns, parallels of latitude and longitude, names, etc., has been omitted, so as to display more clearly the drainage system and the mining districts; and it is believed that both of the latter features are shown with as great accuracy as possible upon a map of such small scale. The writer has partially completed maps of each State upon a much larger scale, showing the same features in greater detail and with more accuracy.

It will at once be observed that the mining localities are not scattered irregularly over the country, but are situated along ten belts, all of which have a general N. E. and S. W. trend, are roughly parallel to each other, traverse the region between the plains and the ocean like gigantic lodes and are separated by barren areas quite as extensive as, if not larger than themselves. [As a genuine effort has been made to locate all the mining districts of the West (though less than half are marked on the present map) these barren localities are really barren, and are not merely unprospected or unprofitable. I may also add that the investigation has been pushed some distance into both British Columbia and Mexico, with the result that so far each belt of rich and barren territory continues in the same line. In Central Nevada there appears a short and narrow belt between the two adjacent ones, which may properly be regarded as a connection, and around the mouth of the Colorado River two belts appear to unite.

Although all these great lodes (if they may be so considered) are approximately parallel, yet when No. 1 in the northwest is compared with No. 10 in the southeast, a distinct divergence is apparent; and if the central line of each be considered its course, the conclusion is that each lode departs more from a true N. and S. line than its neighbor to the eastward, and finally that all follow in a general way the curves of the lines of magnetic variation. I am of the opinion that when the problem is

thoroughly worked out it will be found that the axes of all will be identical with mean magnetic curves.

The subject of mineral belts is not a new one. R. W. Raymond, Clarence King, J. F. Kemp and several others have at different times called attention to the phenomena in various ways, but I am not aware that any have mapped them along the courses here shown, or suggested their possible connection with terrestrial earth currents. The mere fact of approximate parallelism is simply graphically interesting, but if their coincidence with the curves of magnetic variation can be clearly and unmistakably proven, it

archean, metamorphic and eruptive rocks (in which it is generally assumed metalliferous deposits occur) that are wholly free from ores; while within their limits not only are these rocks well impregnated, but the mineralization in many places has extended to limestones and sandstones of very recent age.

2. That the mineralization and fissuring of the earth's crust has not been connected with, and is not one of the results of, the elevation of mountain ranges. For the facts appear that the lines of fissure cross the lines of divides at all conceivable angles. To make this clear, the continental divide is strongly displayed on the maps by two parallel broken

lines with one continuous and lighter line between, and all other high ranges by one broken and one continuous line, while the subsidiary divides are marked only with the fainter continuous line.

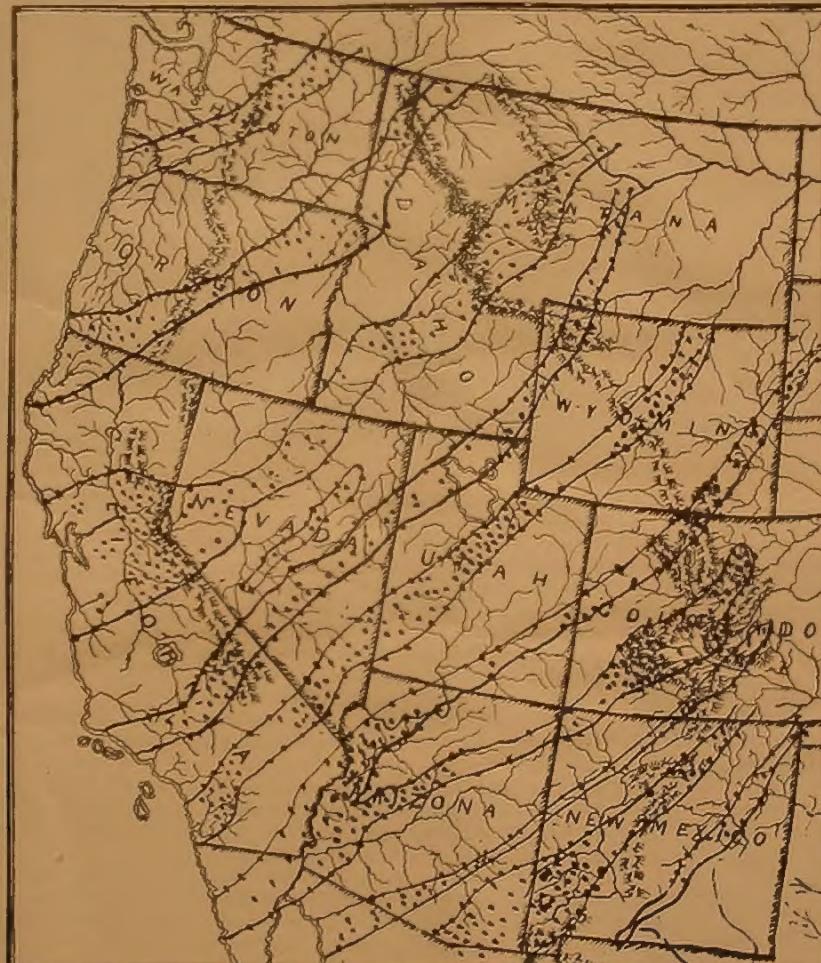
3. That mineralization is an older phenomenon than mountain range formations, as might naturally be expected if it has any connection with the curves of magnetic variation. For, where the lines of fissuring are locally approximately parallel with the crest of a prominent divide the axis of the belt is visibly flexed. This feature is clearly shown at a number of points upon the large scale maps in progress in the writer's office.

4. Certain localities apparently promising, but outside of the belts, may be definitely abandoned by the prospector; while others within their limits should receive more careful investigation, even though surface indications are not attractive. For, if there are definite and continuous lines of fissuring and mineralization, these will at places be covered by rock or alluvial formations of recent date, or capped by volcanic overflows, and yet be sometimes accessible artificially or through deep erosion. An instance of this latter condition is found in parts of the Canyon of the Colorado, which

cuts for over 100 miles through the course of Belt 6,

The writer hopes gradually to be able to complete his more detailed maps, and to call (attention with their aid) to certain peculiarities of mineralization or rather metallization in some of the Belts, which are at least interesting, and which may have some bearing on the genesis of ore deposits in general.

The Guggenheim Smelting Company is making extensive additions to its refining plant at Perth, Amboy, N. J. The buildings will be fireproof throughout, constructed of steel framework covered with corrugated iron. The contract for furnishing and erecting these buildings has been let to the Berlin Iron Bridge Company, of East Berlin, Conn.



MAP OF THE LOCATION OF THE PRINCIPAL MINING DISTRICTS IN THE WESTERN UNITED STATES.

would not only be highly probable that electrical energy in one form or another has had much to do with the deposition of metalliferous ores, but it would be a fair conclusion that in the region of the Magnetic Pole on the north shore of Hudson Bay, where the belts converge, excessive mineralization exists. Further, if system in the fissuring of the earth's crust by mineral veins is clearly shown in the Western United States, the same system will most certainly be found all over the globe.

So far as the present showing goes, some economical conclusions seem to be warranted, which can be briefly stated as follows:

1. That geological formations do not necessarily constitute a guide to probable mineral deposits. For, between the mineralized zones shown on the map are vast areas of

ONTARIO MINING COMPANY.

The Ontario group of claims is located about twelve miles southeast from Elliston, Deer Ledge county, Montana, on the N. P. R. R. near the head of one of the tributaries of the Little Blackfoot; but so near the summit of the great continental divide that Rimini in Lewis and Clarke county, on a tributary of the Missouri, and the terminus of a branch of the N. P. R. R., is less than seven miles distant. These mines are in the very heart of the most prolific mineral region of the country, surrounded by abundance of timbers for building, mining and fuel, and ample water is at hand.

William Dyer, the president of the company and the principal stockholder, was one of the original discoverers and locators of these mines in the summer of 1886. The first carload of ore from the Ontario mine was shipped October 1st, 1889, to the U. S. Sampling Works in Helena and netted \$1,556. From that time down to August, 1891, only twenty-four carloads of ore came from the mine, owing to disagreements and legal proceedings between the joint owners—which were settled by Mr. Dyer buying out the interest of his joint-owners for \$60,000, which has been paid from the earnings of the mine as fast as the notes became due. Since Mr. Dyer became sole owner down to the organization of the company, he had shipped 157 carloads of ore to various smelters at East Helena, Butte, Great Falls and Tacoma, to the gross value of \$149,485 87, and giving net proceeds of \$110,660 02, though working at a disadvantage and having extravagant charges for hauling to the railroad.

COLVILLE RESERVATION.

This district has reached a more advanced stage of development, and produced more ore than any other silver district in Washington. It forms the southern half of a belt extending

about ten miles east from the headwaters of Cedar and Deepcreek which waters empty into the Pend d'Oréille River near the boundary, southward for seventy-five miles, terminating in that direction in the Cedar Canyon District.

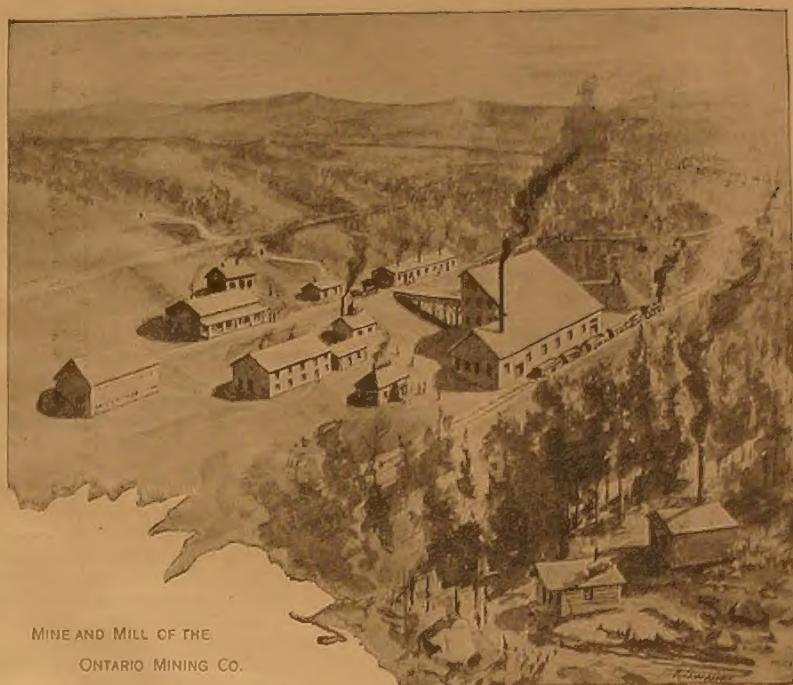
Like all other pioneer discoveries, it has had its alternate periods of activity and torpor,

and now appears to have become the scene of renewed development, in sympathy with the movement generally prevalent throughout the Pacific Northwest.

The formation of this belt of country is granite, lime, slate and quartzite, and is veined with a belt of bodies of silver-lead ores, running sometimes north and south and other times east and west. These occur either in contacts between granite and lime, slate and lime, or slate and quartzite, or in fissures in the slate or lime. Where they occur in the lime formation the ledges show a good deal of surface disturbance, but at depth settle into permanent bodies of ore, either in chutes or veins. In the slate formation the ledges are almost invariably in place.

The first discovery was made in 1883 at the Embry camp, two miles east of Chewellah, by a party of prospectors sent out by John N. Squire of Spokane. The ore in that section carries galena, sulphide of silver, some carbonate of lead and chloride of silver, mixed with iron and copper pyrites. A rush of prospectors followed within two years, and explorations extended northward. Thus followed the discovery of the Old Dominion, seven miles from Colville, where the ledge is a contact between granite and lime, the ore carrying bromide, chloride and sulphide of silver, with occasional bunches of galena.

Then followed the discoveries at the head of Deep Creek and Cedar Creek, and along the range east of the Columbia to Little Dalles, this territory being included in the Northport district. Fifteen miles further south, in the Young America at Bossburg, the ore is lead and silver entirely. Five miles further southeast, in the Big Bonanza, we find a heavy mixture of galena and iron pyrites, carrying about 40 per cent. lead and ten ounces silver. Still traveling southward, we come to Gold Hill two miles east of Marcus, where the ore is copper pyrites carrying gold. On

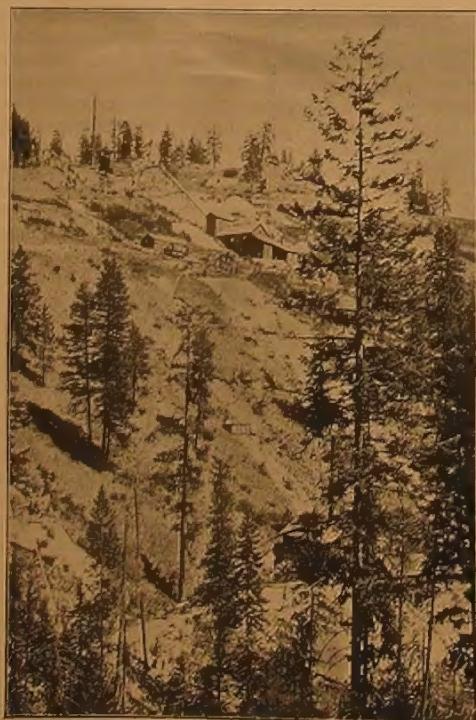


MINE AND MILL OF THE
ONTARIO MINING CO.

Rocky Mountain, five miles more to the south, there is a great quantity of gray copper ore, but it is very much broken and no solid bodies have yet been found. Going fifteen miles onward to the south, we come to the Summit camp, where the ore carries galena and lead carbonates, and five miles to the southwest of this camp is the Wellington, with the same class of ore. Five miles south of this is the Cleveland mine, where the ore is galena, carrying about 40 ounces silver. All the ores of this belt are high grade, except those of Deep Creek, where they carry from 25 to 40 ounces silver and 40 per cent. lead.

The best developed and most productive mine in this belt is the Old Dominion, which embraces a group of claims covering the whole mountain and which is owned by the Old Dominion Mining and Concentrating Co. It is reached from Spokane by the Spokane Falls & Northern Railroad to Colville, 88 miles, whence a wagon road leads to the mine seven miles distant. The ore chute crops on the surface to a length of 400 feet in the contact between lime and granite, and in chambers 40 to 50 feet wide. The mine was first developed near the surface by a series of tunnels aggregating 3000 feet in length, attaining a depth of 250 feet. A tunnel was then driven 3,000 feet on the contact at a further depth of 400 feet and at the end of that distance struck a chamber of ore, which is now being developed. A cross cut has also been started and has opened other small veins, ranging from six inches to twelve feet. The ore carries bromide, chloride and sulphide of silver, with some native silver, and its contents range from 25 to 125 ounces silver, with 30 per cent. lead and \$3 gold. There is on the ground a concentrator with a capacity of 70 tons a day to treat the low-grade ore. The smelter returns show that about \$2,072,000 has been taken out of the mine and when shipping regularly, it produces about \$16,000 a month gross, or \$12,000 net, employing seventy-five men.

We present herewith a good view of this valuable property.



OLD DOMINION MINING AND CONCENTRATING CO.'S PROPERTY
COLVILLE, WASH.

**MARYSVILLE,
MONTANA.**

About twenty miles from Helena is located the Marysville Mining District in which is situated in the town of Marysville. Marysville is surrounded by some of the greatest mines and mining districts of any camp in Montana.

DRUM LUMMON.

Here is located the celebrated Drum Lummon property owned by the Montana Company, Limited, the principal office of which is in London, Eng., E. C. The officers are Stewart Pixley, chairman; Thos. Neal, secretary; Geo. H. Robinson, manager. The company is capitalized at \$3,300,000; — 660,000 shares at a par value of \$5, and is non-assessable. It has paid regular dividends of \$05 25 per share, making a total of \$2,997,557 paid up to and including May, 1898. The mineral produced by this famous mine is gold and silver and is refractory, 85,000 tons having been the output. Steam and electricity constituted the power to run the two mills, one a 110-stamp mill, the other a cyanide plant of 400 tons capacity. The property is developed by tunnels and shafts and employs about 300 men. James H. Henley is the superintendent.

The Drum Lummon is one of the best developed mines in the state and the work of the

VIEW OF MARYSVILLE, MONTANA, AND DRUM LUMMON MINE AND MILL.

last year indicates from the new finds of gold-bearing veins that it will be for years to come a source of profit to its owners.

EMPIRE MILL.

Nearly 500,000 have been expended on the Empire mine and mill, making one of the best equipped properties in Montana. The mill, as will be seen by the illustration, is of great size, containing as it does sixty stamps, some twenty True Vanners and three rock crushers. In 1886 87 under the management

of Mr. Sizer this property produced \$344,000.

In April, 1894, the property passed into the possession of Samuel Word & Son. Previous to this time it was operated by an English company which built and operated nearly all the improvements now on the property.

In the same district are other good mines, among them the most noted being those of the St. Louis mining Co. This company is largely composed of gentlemen residing in Helena, Montana, for whom the mines are named. It has several good properties and were it not that it is operating in the immediate vicinity of the famous Montana Company, limited, it would have much more prominence as a mineral producer than it has.

Marysville ores that would not pay to treat ten years ago are returning handsome dividends to the owners today, and it will no doubt be found that ores that are too low grade and refractory at this time will, five or ten years hence be worked with great profit. This will be due to the ever improving and much cheaper methods coming up all the while.

A New Belt Dressing.

There has been a growing demand among belt users for a more convenient form of belt dressing than the paste. The Joseph Dixon Crucible Company, Jersey City, N. J., are now placing on the market a solid belt dressing in round bars, about 8 inches long and 2 inches diameter. It makes a package convenient to the hand, and easy to apply even to fast-running belts. The company does not claim that the solid dressing is as good a preservative of the life and elasticity of the leather as the Dixon paste, but it is quick to apply and quick to act, and that is what is wanted by the general run of belt users.



EMPIRE MILL (60-STAMP) NEAR MARYSVILLE.

CORRESPONDENCE

CALIFORNIA.

ACTON, CAL., Aug. 17, 1898.

EDITOR JOURNAL:—Will you kindly correct the statement made in your issue of 15th inst, in regard to the Red Rover mine.

I was sent here by the new management as superintendent of the mine, and neither I nor the company wish to have any extravagant reports go before the public. It can be of no possible benefit to us or the public at large. I cannot believe that Mr. Gilbert would make the statement that the mine shut down with ore in sight worth five or six thousand dollars per ton. We expect that the large body of ore will mill about six or seven dollars per ton, and that will leave us quite a margin for profit. Yours respectfully,

W. R. SHILLING.

NOTE: The statement above referred to was obtained from what we supposed to be a reliable source, but it evidently was not.—
ACTING ED.

NEVADA.

SILVER PEAK, NEV., Aug. 5, '98.

EDITOR JOURNAL:—As I wrote you sometime ago—about the Louis Chiatovich property—the mill would start, which it did, but only ran for a few days. Mr. Chiatovich crushed the rock dry, and tried to work it in the cyanide tanks, but could not save the values. He then crushed it wet and ran it over the plates, but that did not do the work.

The ore is evidently mixed with some mineral unknown to Mr. Chiatovich other than the lead quartz.

If satisfactory arrangements can be made with the Selby Smelting and Lead Company of San Francisco. He will ship the ore there and have it treated by them.

Some of the ore will go over \$300 per ton.
I. X. L.

UTAH.

SALT LAKE CITY, Aug. 12, 1898.

EDITOR JOURNAL:—The Utah mining stock market this week shows a decided broadening tendency. Some of the neglected silver stocks were conspicuously active and strong, while the regular investment stocks kept the pace fairly well in the advance.

Ajax quotations were unchanged, but there seems to be a better feeling prevailing in the stock, due, doubtless, to the encouraging nature of the developments now being made at the mine. It is not looked for any important change to occur until drifting is commenced from the new shaft, which is now nearing the 600 foot level. Features here are expected to be identical with those of the Mammoth, the adjoining mine, where extensive bodies of high-grade ore are found in the deeper levels. There are rumors to the effect that Alice will shortly declare a dividend of 5 cents per share, but it can not be verified. Anchor is being offered down.

Bullion Beck made a strong advance on the report that the smelter contract is practically closed. The mine is supposed to have \$75,000 worth of ore ready for immediate shipment. The regular dividend of 10 cents per share has been declared and will be paid on the 15th. There was no demand for Centen-

nal-Eureka, and odd lots of stock were offered rather freely.

Reports are that the Chloride Point ore is averaging per ton about 27 ounces of silver and 60 cents in gold, and that all the gold is being saved and about 70 per cent of the silver. If this is an accurate statement, the showing is creditable. The inside interests endeavored to bulge the stock today, and it sold up to \$1.07, but large blocks of stock were thrown on the market and the stock closed at .99½ bid and 1.01½ asked.

Dalton's assessment of ½ cent per share was delinquent August 10th. There was a vast discrepancy between the bid and the asking price of Dalton & Lark. Daly holds well and so does Daly-West. Dexter was a trifle higher. Shipments of crude ore, bullion and cyanides for the month of July amounted to about \$24,000. Geyser-Marion was in demand presumably on inside buying. Grand Central's weakness was hard to understand. The showing at the mine could not be better. It is understood that the mine earned \$28,000 in excess of the dividend for the month of July. The regular dividend of 12½ cents per share, or \$31,250 was paid on the 10th.

Mammoth was steady. The regular output is being maintained. Mercur was considerably stronger on investment buying. The regular dividend of 12½ cents per share was declared on the 9th, payable on the 20th. No definite information is being given out by the company as to what action will be taken relative to the new mill. Rumors were current that a strike had been made in Northern Light, but the effect was not observed in the price of the stock. There was an increased demand for Ontario. Omaha was in good demand. This stock ought to show considerable activity in the near future.

Sunbeam was very quiet. The Silver King dividend of 25 cents per share was paid on the 10th. Sacramento was stationary as to quotations. There seems to be a liberal supply of stock on the market. Sunshine quotations were unchanged. There is nothing to inspire trading at present. Swansea paid its dividend of 5 cents per share on the 10th. The stock was very strong and in demand. South Swansea holds up well. The regular dividend is expected to be paid this month. Utah was in demand. The company ought to resume dividend payments by the early autumn. Valeo, of Park City, was exceedingly active, on the report that Messrs. Keith & Kearns, of the Silver King, had purchased the controlling interest and would assume the management. Young America was in fair demand.

Miscellaneous Mining News.

ALASKA.

The steamer Oregon arrived at Departure Bay, last week, from Sitka direct, with over 100 passengers, the majority of whom were from the Copper River country or from Dawson. Her passengers declare that there are 3,000 people on the Valdez glacier at the present time, rushing out as fast as they can, and pursued by the phantom of starvation. If the government does not send aid to them—and that quickly—it is predicted that there will be great suffering, if not actual starvation, on the ice fields. The ice is melting fast; the streams are full and running over, it being extremely hazardous to cross them—yet, rather than stay and face the prospect of starvation, the erstwhile hopeful gold seekers

are risking everything. Men that went in with considerable money only a few months ago are now penniless, and cursing the day they ever heard of the Copper River country.—*Miner and Electrician.*

ARIZONA.

The King of Arizona Gold Mining Company, Colonel Epes Randolph president, is successfully operating a cyanide plant put in on the King of Arizona property, Yuma county, by the firm of Gardiner, Worthen & Goss, of Tucson, Ariz. The two blocks of gold, registering \$6,000, which were recently sent into Tucson, are mute but convincing proofs of the work done by eight men in fifteen days at the plant—a McArthur-Forest patent.

Colin Timmons, a well known mining man of Yavapai county and Ferd. Nellis, of Williams, have bonded the Payroll, Champion and Twins mines of J. M. Murphy and J. J. Hawkins. The mines are among the richest lead properties of the county, and as the operators are thorough mining men, we may look for a consummation of the sale. A force of men have already been put to work.

CALIFORNIA.

AMADOR COUNTY.

The Keystone Company has shut down twenty stamps on account of the shortage of water. This has involved the discharge of thirty-five men. The Keystone uses water from the Blue Lakes Company.

The Kennedy mill has shut down, and a number of men have been discharged, on account of shortage of water. Steam power will be put in immediately.—*Amador Ledger.*

CALAVERAS COUNTY.

The San Justo mine, at Carson Hill, is an illustration of successful work, by good management, in working low-grade ores. This property was owned by Remington and associates of New York, who expended \$340,000 upon it, built a forty-stamp mill, chlorination works, fifteen-drill compressor and five houses. They operated two years, but the management was too high-grade for the low-grade ore. The mine was shut down and the shaft filled with water. Last December Dr. Flint, C. A. Hamilton and Senator Flint bought the property, unwatered it and retimbered the shaft to the 700-foot level. They have milled ore from the 200 foot and 300-foot levels and are opening levels at 600 and 700 feet. The ore mills from \$3.50 to \$4 per ton. The sulphurates run 5 per cent on the 600-foot level and yield about \$80 per ton. On the 700-foot level a mill run on 100 tons yielded \$14 per ton. The ore bodies are from thirty to eighty feet wide.

INYO COUNTY.

The first shipment of bullion, amounting to over 20 tons from the Darwin smelter went up on last Thursday's train. The smelter is running steadily and keeping a large number of teams busy.

KERN COUNTY.

The plant to be furnished by the Fulton Engine Co., of Los Angeles, for the Yellow Aster Mining and Milling Company, is to be one of the finest and most complete erected in the Randsburg country.

The 50-stamp mill and waterworks to be furnished will cost about \$75,000.

Work has been again resumed on the Little Butte Mine. The repairs to the engine were completed a few days ago, and the agreeable sound in a mining camp, of the dropping of the stamps in the mill, is heard night and day again.

The Lewellyn Iron Works and L. E. Porter, both of Los Angeles, are putting up a large cyanide process at Garlock to work tailings. It is estimated there are 10,000 tons of tailings there at the different mills, and probably \$100,000 will be taken out of them. The capacity of the works will be equal to 60 tons per day.

The Eureka mill people have their cyanide building completed and all the wood work in place and now only wait the arrival of the iron tank, which is expected tonight. On its arrival, they can be ready to operate in three or four days. The capacity of the plant is ten tons per day.—*Randsburg Miner*.

MONO COUNTY.

More bullion is being shipped from Bodie than from any other mining camp of its size in the country, and yet it doesn't appear that there is much going on, though the Standard Company steadily employs upward of one hundred men, and twice that number are employed elsewhere in the vicinity.

RIVERSIDE COUNTY.

A two-stamp prospecting mill is being placed upon the Adams Bros. & Pickett property in the south side of the Chucawalla range in Riverside county. This claim is a gold property recently developed, having a 50-foot shaft sunk upon a good strong ledge.

Fink, Conway & Robinson have also a good property in the immediate vicinity of the Adams Bros.' mine. There is a 90 foot shaft and several tunnels in on their property.

The Chucawalla Mining and Milling Co. have several good properties of which the Happy Jack is the principal mine in this section. Considerable development work has been done on these properties, showing a well defined ledge of gold-bearing ore.

SAN BERNARDINO COUNTY.

Few men are taking out ore in the Dale district, on account of the warm weather. The placers are not being worked at all. At least \$25,000 has been taken out by that method of mining in the last fifteen months.

Meatchem Bros. have struck water in the Dale district at a depth of 108 feet. They will at once begin the erection of a mill.

TUOLUMNE COUNTY.

The Homestake property, situated near Jacksonville, adjoining the Eagle-Shawmut mine on the south, has been incorporated under the name of the Homestake Gold Mining Company of Tuolumne, with a capitalization of \$250,000, with shares at \$1 each. The Homestake was located in 1866, and has been worked at various times ever since, \$20,000 being taken out from its surface workings. The formation is black mineralized slate. The directors of the company are: L. W. McGlauslin, president; I. N. Chapman, vice-president; William Burchett, secretary; Thos. Pozzer and William R. Pozzer. The principal place of business is San Francisco.—*Sonora Independent*.

COLORADO.

At the Barnes, on Quartz Hill, Gilpin county, which is being operated by Byron Lake & Son, stopes are being opened up in the 325 and 400 foot levels. This property continues to ship about fifty tons monthly of fair grade concentrating ore, the smelting ore being a small percentage of the whole output.

Manager Eby, of the Golden Cloud mine, in Russel gulch, Gilpin county, reports that drifting operations are being carried on in the 300 levels, and both mill and smelting ore is being taken out, and shipments will be commenced at an early date. The shaft on this property is 325 feet deep, and it is the intention of the operators to sink another lift in the near future.

The shipments of ore from Gilpin county for the month of July, over the Gulf railroad, aggregated 279 carloads, or 4,464 tons. The shipments for the same month of last year were 280 carloads, and the shipments show that the production of the county in this branch of the yield for the present year is keeping close to that of last year, which was one of the most prosperous in its history.

The Hap Hazard mine at Leadville, in which the latest gold strike was made, is turning out even better than was anticipated. There are now between twenty-five and thirty tons ready for shipment, which average three ounces to the ton in gold, and the tonnage from the property is being rapidly increased.

Victor Mines.

Keith and Grube, leasing on the Vindicator, have drifted on the ore chute a distance of about eight feet and are now operating for air from their 130 foot level. At present they are shipping at the rate of 10 tons per day of ore running from two to three ounces. When stoping is started, this lease will be good for at least 25 tons each day of this grade of ore, as both the quantity and quality of the mineral in the upraise are better than in the drift.

Carey & Howell, leasing on the Little May, on Beacon hill, are now getting out about five tons of medium grade ore each day. In the past two weeks they have shipped five carloads. The lowest ran a little over \$30 and the highest \$80.

A. M. Weare, leasing on the Whippoorwill, on Bull hill, is putting in a plant of machinery over his shaft. He claims to have two feet of ore at the 125-foot level that assays better than two ounces without sorting.—*The Mining Investor*.

IDAHO.

Seven Devils Copper Mines.

Garnet is the name of the camp and proposed postoffice of the famous Blue Jacket group of mines, which are being developed by the Blue Jacket Mining Company. The group is being developed in a manner that is a credit to Superintendent Ireton. His present showing, with only 40 days' development, excels the famous Peacock. The Queen mine, one of the group, has a shaft 45 feet deep, four by seven, that is in first-class ore. Pieces of four and five hundred weight, of 70 per cent copper, is being extracted from the shaft. Superintendent Ireton says that, as soon as he can procure transportation, he

will ship a carload of ore to prove that the Blue Jacket lode is the richest copper lode in the known world. He says: "After I have done the development work the company intends doing, I will have copper in sight to pay the national debt at the present prices of copper." And any one that sees the present showing that is made will not doubt him in the least, for the Queen, King, and Blue Jacket No. 1 are growing larger and richer on every day's work. A tunnel is being run on the vein that will tap the last claim some 800 feet in depth. When the work is completed they will have a body of high-grade ore ready for extraction with an average width of 12 feet, 1,200 feet in length, and between 400 and 500 feet in depth. Every shaft drift and crosscut along this group bears witness to the above body, therefore we consider it a very conservative estimate of what the work will place in sight.

MICHIGAN.

The new D shaft, at the Lake Angeline mine, of the Pittsburg and Lake Angeline Mining Co., at Ishpeming, is in use, though as yet but little ore has been hoisted through it. The shaft house is about finished. The old or west end of the mine is nearly worked out, only one of the six skips being in use, and this one in C shaft will probably be abandoned by the close of the shipping season. The miners there are getting out pillars. There is a large amount of dead work underway, and a lot of exploration work has been under way some time with diamond drills. Superintendent Watson intends to transfer the crusher at C shaft bodily to the new shaft when C shaft is abandoned.

MINNESOTA.

The monthly report of the Sault Canal from Lake Superior shows that in July the canal beat all preceding records by nearly 300,000 tons, the largest month prior to July being June of this year, which was 19,000 tons larger than any earlier month. In this year, to August 1st, there have passed the canal going east 5,159,025 gross tons of iron ore, and in July 2,055,574 tons. This is 1,130,000 tons more than for the same three months last year, and 1,163,000 tons more than for the same time in 1896. So far this year the tonnage of iron ore has been about 60 per cent of the total. In all, 22,500,000 bushels of grain have been taken through and 1,825,000 tons of coal. The probabilities are that the present month will show a bigger tonnage of all commodities than did July.—*Engineering and Mining Journal*.

MISSOURI.

Col. T. J. Hart, of the Narragansett Mining Company, intends to replace his present pump with a 16x10x12 Snow duplex pump.

Top Run Mining Company is operating on town lots in the southwest part of Joplin, with a good steam concentrating plant that will handle 200 tubs of dirt every 9 hours. At present 12 men produce weekly about 6 tons of zinc ore and 20,000 lbs. of lead ore.

Vaughn & Company have two lots on the Empire Zinc Company's land, where they have a good steam concentrating plant that handles 200 tubs of dirt every 9 hours, and produces 20 tons of zinc ore weekly. They employ 10 men and use two steam drills, as their ground at 85 feet is very hard.

MONTANA.

R. A. Bell recently took a bond on the Winscott mine, two and a half miles from Helena. He has had six men at work only a few days, and will make a shipment of ore to East Helena during the week. Samples from the south dump assayed 4.32 ounces of gold, worth, at \$20 an ounce, \$86.40, and 5.9 ounces of silver, worth, at 59 cents an ounce, \$3.48, giving a total value of \$8,988 a ton.

The Winscott being within a short distance of Helena, its success will give encouragement to several other properties that have not been worked for sometime past, but which are in the same locality.—*Helena Independent*.

The Mammoth Gold Mining Company, of Coloma, Missoula county, has been attacked by Larabie Bros., bankers of Deer Lodge, and W. B. Hosmer, of Boston, president of the company, for \$25,000. The Larabie Bros.' account is for an overdraft on their bank and Mr. Hosmer attaches for money he has advanced from time to time. The Mammoth mine, under the new company and under the management of A. B. Brown, has been running the past eighteen months, during which time \$100,000 have been sunk. Some money was made, but it and other money acquired from assessments was put into the property. The assets amount to the property, a hoisting plant and air compressor and five-stamp mill.

The big crushers at the Snow Shoe mill, near Libby, Flathead county, gave out the first of the week and caused an unavoidable shut down of that mill for a time. New crushers are on the way from the factory, but were delayed in transit and parties were immediately dispatched to Spokane to procure repairs in haste. The breakage will not cause any inconvenience except a loss of a few days' time.

NEW MEXICO.

Output of Hillsboro gold mines for the week ending Thursday, Aug. 11th, 1898, as reported for the *The Advocate*:

	Tons
Wicks.....	15
K. K.	10
Richmond..	15
Snake Group.....	50
Opportunity.....	15
Sherman	5
Cincinnati.....	10
Trippe.....	25
Rex (silver-lead).....	5
Total	150

Total output since January 1, 1898.—4,780.

NEVADA.

A Rich Ledge.

H. H. McColley and Chas. McConnell are developing a mine near Willow Creek, Humboldt county, which gives promise of being a valuable property. The first work which they did on the mine was the sinking of a forty-five foot shaft on a ledge from ten to sixteen inches in width, the ore averaging sixty dollars in gold and two hundred ounces in silver to the ton.

Owing to the difficulty experienced in hoisting with a windlass at this place of work-

ing, they started another shaft at a distance of about 700 feet, and are down about twenty-five feet. The ledge is about the same size as that of the first shaft, but the ore assays much higher.—*Silver State*.

OREGON.

King Solomon Mine.

A syndicate of Montreal, Canada capitalists has just purchased the King Solomon mine, in the Bonanza district, and the new owners propose to expend from \$25,000 to \$30,000 in developing the property, having already a good force of miners at work in sinking operations.

The Baker City Sampling Works, of which Messrs. Kadish & French are the owners and operators, last week received eight carloads of concentrates from the La Bellevue mine. These concentrates will be tested and purchased by the above-named firm. The sampling works, which handle nearly the entire product of the mines of this section, prove a wonderful aid in upbuilding the city.—*Democrat*.

It is reported that a fine strike has occurred at the celebrated Virtue-Collateral mine. The new vein exposed is four feet wide, and gives every indication of carrying excellent gold value. The tunnel, which led to such a good body of ore, is something over 500 feet in length, and strikes the ledge about 200 feet below the surface of the hill. Some thirty miners are operating at present, and the force may be increased.

SOUTH DAKOTA.

W. E. Sharpe and associates are working a large force of men in Calamity gulch, on leases recently made on the Hattenbach, Black Diamond and Hermitage claims. The ore runs from \$7 to \$60. The cyanide plant, which the company is about to start up at Spearfish, will treat ore from this property. It is understood that the cyanide plant is nearly ready for work, there being delay on account of the non-arrival of a set of rollers.

The owners of the Harrison mine, north of Lead are being much encouraged over the prospects that are being opened up. The ore body has been drifted into about 35 feet, all in a high grade ore. A shipment of three cars is ready to be sent to Kansas City, which will average about \$70 a ton. A night shift is to be put on very soon and the capacity of the mine increased. The Durango property, adjoining the Harrison, is opening up very well. Three carloads were just shipped, one to the Deadwood cyanide plant and the other two to Kansas City.—*Black Hills Mining Review*.

UTAH.

South Swansea declared a dividend of five cents per share, payable on the 23rd.

Bullion-Beck paid its regular dividend of 10 cents per share, or \$10,000, on the 15th. This carries the total to \$2,515,000.

It is reported that Centennial-Eureka will build a mill to handle the low grade ores. It is estimated that the mill will cost \$150,000.

A decision in the Geyser-Marion case was handed down this week to the effect that a deed should be given to the plaintiff for a one-

half interest in the Geyser claim, and that an accounting must be made for one-half of the proceeds derived from the sale of ore extracted from this claim. The matter is a vexatious one, but not gravely serious. In the first place, the claim covers only six acres of ground, and will be owned jointly by the plaintiff in the case and the Geyser-Marion Company. The total ground holdings of the company cover about 100 acres, and a relinquishment of one half of six acres ought not to affect the value of the property to any great extent. In the accounting for ore extracted, the bulk seems to have been taken out by those working the property prior to the time that it was acquired by the Geyser-Marion Company. Legal advice on the subject is to the effect that if a settlement must be made it should be closed on the basis of a surrender of one-half interest in the Geyser claim and the payment of a sum probably not in excess of \$5,000 for ore extracted. For a round year, the Geyser-Marion Company has been forced to face a chapter of difficulties, "but it's a long lane that has no turning," and Geyser-Marion may yet prove to be all that its friends have claimed for it. The mine never looked better, and with the present difficulties removed the company will yet make a creditable record.

WASHINGTON.

Republic Camp.

The tonnage of Republic ore that is being freighted to Bossburg and loaded on the cars for shipment is gradually increasing. Louis Adams, who attends to the Republic Company's shipping at that place, reports that the last car of ore was loaded in three days, making an average daily shipment of about eight tons, or \$16,000 worth of ore.

The Deer Trail No. 2 Mining Company operating the property of that name in Stevens county, has declared its first dividend of one-half cent per share. It is expected that dividends will be monthly events from this time on, and that the size of the dividends will be materially increased in the near future.

FOREIGN MINING NEWS

BRITISH COLUMBIA.

Le Roi Suit.

Senator George Turner and Colonel W. W. D. Turner have sued the British American Corporation and the Peyton faction of the Le Roi Company for \$780,000 damages, alleging conspiracy to depreciate the value of the Le Roi stock. The complaint sets forth all the facts concerning the Le Roi deal from its earliest inception, and tells of the wild flight of the trustees across the state to British Columbia, to evade service of court. Conspiracy and fraud are charged against the Le Roi stockholders, who want to sell their holdings to the B. A. C. and the big corporations, and its officers are also charged with fraud in endeavoring to obtain control of the mine. The chief argument in the case, however, is that it is unlawful and contrary to public policy for a foreign corporation to buy a majority or the control of the stock of a domestic corporation.

Ore Shipments.

The shipments of ore over the Kaslo & Slocan Railway, from August 4 to Aug. 10th inclusive, compiled for the *Kootenaiian*, were as follows:

MINE.	DESTINATION.	POUNDS.
Payne.....	Pueblo.....	300,000
Slocan Star.....	Pueblo.....	120,000
Last Chance.....	Pueblo.....	80,000
Ruth.....	Pueblo.....	40,000
Ruth.....	Everett.....	40,000
Whitewater.....	Everett.....	96,600
Coin.....	K. O. Co.....	13,000
Carbonate No. 3.....	K. O. Co.....	2,800
Total.....		692,400 pounds or 346 1/4 tons.

LOWER CALIFORNIA.

Tom Peterson returned to Eusenada, Lower California, from the north last week, where he had been to secure a quartz mill. He decided on a Wiswall which is now being constructed, and which he expects to have in position on his San José property in a couple of months.

The Boleo (French) Copper Company of Lower California is putting up reduction works on another group of rich copper mines lower down the peninsula.

The copper bullion of the Santa Rosalia mines of Lower California carries \$60 gold to the ton and some silver and lead.

MEXICO.

The Big Four Company is putting an 80-stamp mill in at Las Planchas, Sonora, near Nogales.

The cyanide plant at La Colorado, Sonora, is to be doubled, the material for two large additional vats being already on the ground.

The Moctezuma Mining Company, operating in the district of that name in central eastern Sonora, is now employing 700 men and is preparing to erect a smelter.

Both the Cinco de Mayo mine, owned by Don Pancho Sandoval, Jesus Amparan and Antonio Castillo, and the Escondida, owned by Paul Ginter, J. H. Heatherly and Charles Beisswenger of El Paso, being situated three miles from Summit Station on the new Sierra Madre Railroad in Sonora, are still working in high grade ore.—*Southwest Bullion*.

RECENT ADVANCES IN SILVER-LEAD SMELTING*

BY RICHARD TERHUNE.

While many of you have suffered greatly by the fiscal policy of the world in the demonetization of silver, there is much left that gives you hope; old processes are being improved and new ones arising, until it goes without saying that values and quantity having been established, some method of extraction can be depended upon.

There are "cyaniding," "chlorination," the so-called "combination process" of plates, vanners and pans, and, latest of all, "bromine extraction," offering much promise for treating coppery ores, if free from lime and yet too base for amalgamation. Then we have, which is the topic of this paper, the time-honored stack furnace process for silver-lead smelting, which took ores which all other methods gave up, asked few questions,

*A paper read before the International Mining Congress, held in Salt Lake, Utah.

and paid the miners of Utah, in 1897, sixty-two and sixty five, one hundreds per cent of the New York value of the entire contents of each metal.

1897.—Net tons, ore, 25,048; pounds Pb., (lead), 12,676,669; ounces Ag., (silver) 785,317.2; ounces Au., (gold) 6,380,037; total cost, \$658,204.74; average cost per ton, net ore, \$26.27.

Figuring the above with New York market prices of 1897, silver, 59.8c. per ounce; lead, \$3.58 per 100 pounds, and gold at \$20.00 per ounce:

12,676,669 lbs. Pb. (lead), at	
\$3.58 per hundred.....	\$ 453,824.75
785,317.2 ozs. Ag. (silver) at	
59.8 cents an oz.....	469,619.68
6,380,036 ozs. Au. (gold) at	
\$20.00.....	127,600.74

Total New York value..... \$1,051,045.17

658,204.64 ÷ 1,051,045.17 = 62.65 per cent, New York value.

\$41.96 New York value, contents one ton, ore—1897.

In 1886, but 58 per cent of New York value of entire contents of one ton of ore was paid the Utah miner.

1886.—Net tons ore, 26,015; pounds Pb. (lead) 14,836,935; ounces Ag. (silver) 990,576.3; ounces Au. (gold) 2,319.6; total cost, \$1,803,320.27. Average cost per ton, net ore, \$38.57.

Figuring the above with New York market prices of 1886: Silver, 99 cents per oz.; lead, \$4.63 per hundred, and gold at \$20.00 per oz.

148,369.35 pounds Pb. (lead)	
at \$4.63 per hundred.....	\$ 686,959.09
990,576.3 ozs. Ag. (silver) at	
99 cents an ounce.....	980,670.53
2,319.6 ozs. Au. (gold) at	
\$20.00 an ounce.....	46,392.00

Total New York value..... \$1,714,012.62

1,003,320.27 ÷ 1,714,012.62 = 58 per cent of New York value paid.

\$65.84 New York value, contents 1 ton ore, 1886.

	New York Value of Contents.	Price Paid in Utah.	Margin.
1886.....	\$65.84	\$38.57	\$27.27
1897.....	41.96	26.27	15.69
Difference, ...	\$23.88	\$12.30	\$11.58

Decline in prices of fuels and fluxes in 18 years:

Year.	Price of Coke.	Price of Iron Ore.	Price of Limestone.
1880	\$23.50	\$6.75	\$1.75
1898	9.75	4.35	1.00
	\$13.75	\$2.40	\$.75
=58.5 p. ct.	=35.5 p. ct.	=42.8 p. ct.	
decline.	decline.	decline.	

Decline in cost of coke, iron and limestone in eighteen years, 52.8 per cent.

Year 1880, price of coal, \$7.40

" 1898, " " 3.75

\$3.65 = 40.9 per cent decline.

PERCENTAGE COST OF ELEMENTS:

Year.	Coke.	Iron Ore.	Limestone.
1880.	66.3	27.5	6.2
1898.	66.3	23.9	9.8

From the above it is shown that coke is the expensive factor of our business; but, far as we are from attaining the theoretic effect of fuel in the blast furnace, we are nearer to it than the old Sheffield pot melting furnace for steel, which required two and one half tons coke to the ton of steel melted, equaling 1-70 the theoretic or calorific value of the fuel, or the coal-fired iron heating furnace, which used 1 1/3 tons of coal to the ton of metal heated to 2900 degrees Fahrenheit, equaling 1-20 the theoretic effect of the fuel. In lead practice we exceed 3/4 the true calorific effect of the fuel, for we heat 2000 pounds of slag to 2000 degrees Fahrenheit with 517 pounds of coke, besides requiring of this fuel other functions.

The value of hot blast would be great to us, were it not for the necessity of solid carbon in the charge. This could not easily be reduced in quantity, and as it now affords the necessary heat and reducing power, the gains from the custom mills are so rare, and usually so unsuccessful, that smelting has proven a blessing to small miners, and the world over it has afforded them a certain and good market for one ton or ten tons of ore.

No other process than smelting extracts 100 per cent of your gold, and few extract as much silver. Under proper conditions, it can take any part of the earthy crust of our planet, turn it into a liquid slag and remove its values.

Follow in your imagination the complex charges of a lead blast furnace, often containing ore from 25 mines, and perhaps half as many districts, from its entry at the feed door to the discharge below of four well-defined new products: matte, speiss, bullion and slag, and you must concede a wonderful, if it is a commonplace process.

The improvements in silver-lead smelting in recent years have been along the following lines:

The judicious location of plants.

The introduction of steel buildings.

The increased size of plants.

The increased size of blast furnaces.

The improved means of slag disposal and separation.

Better sanitary conditions about works.

Dispensing with heap roasting.

Improved system of flue dust condensation.

The use of automatic roasting furnaces.

Improved crushing machinery.

The bouqueting of fine ores and flue dust.

Internal system of tramways.

Better power plants.

Improved rotary blowing machines.

Better railway service.

Chemical basis of ore purchase.

Tendency to uniform systems of assaying.

Improvement of men and service under eight-hour system.

Piston blowers.

First move:

Judicious location of plants, with reference to proper mixture and supply of ores and cheap and ample sources of good fuel and fluxes, due regard being had for the market for bullion; distances of unwise and often fraudulent location of boom plants, with their pernicious effects upon capital and communities and legitimate enterprise are becoming more and more rare, thanks to a vigilant and

generally honest technical press, and as well to human experience.

Second move:

The growing use of steel building purposes in metallizing, economical alike in insurance of premises, the stability of a business, and offering special freedom from anxiety, which must attend wooden structures for roasting and smelting purposes. The large plant, as the outgrowth of competition as in all other lines, has lowered sized charges, and made large contracts, with their attendant advantages, possible.

The large blast furnace has called for better structural work, in which arches with tension bolt chords have given place to the old type of cast iron deck plate, to sustain the brick superstructure, and stronger caissons to enclose the lead well or crucible; the best practice is to not attempt to resist a pressure that is almost infinite, to provide releasing bolts to let out these plates at the beginning of a run; solid steel plates under the lead emable are now replacing riveted ones, thus preventing any possible leak of bullion; often twenty tons of bullion have been found under riveted plates.

The cross section of blast furnaces at tuyeres doubled and feed floor, trebled in twenty years, while the height has in some instances been increased fifty per cent; the long rectangular form has almost entirely displaced the square or circular cross section. Twenty years ago, a tuyere area of 42 by 72 was almost general. Now 44 by 144 is employed. In that early day, thirty-six square area at feed floor was used; now, 108 square feet are commoh. Heights have risen from twelve to eighteen and twenty feet, but the practice now shows a downward tendency in this regard. As a compact column does not admit the blast, walls of blast furnace have reached a thickness of thirty-one inches at the mantel, giving greater durability, so as the better to resist expansion and retard radiation of heat.

(To be Continued.)

The Jeffrey Manufacturing Co. of Columbus, Ohio, have just completed their Sheet Metal Department, the most extensive in the west, especially equipped for the manufacture of Jeffrey Standard Elevator Buckets and Spiral Conveyors.

The Jeffrey Co.'s long practical experience in the past twenty years enable them to manufacture a superior class of material which has no equal in the markets of the world. Send for their revised quotations and complete catalogue.

MINING LAW.

All questions and disputes concerning mining law, if addressed to the JOURNAL, will be answered under this heading by F. M. JEFFERY, mining attorney of Los Angeles, Cal. The latest important court decisions on mining cases will also be given.

Questions and Answers.

(Q.)—What is the effect of the recent decision of the Supreme Court on extra lateral rights?

(A.)—The U. S. Circuit Court have held that where a vein crosses one end line and one side line of a lode claim, that the side line became the end line of the lode, and no extra-lateral rights existed on the claim. The decision of the Supreme Court, referred to in the above question, has changed the law on this subject. The court held that the side line does not become the end line when the vein crosses one end line and one side, but that it remains a side line and that a vein aping within a claim situated as above may be followed on its dip outside of the side line.

(Q.)—Have I a right to enter an enclosed field of a squatter and search for minerals?

(A.)—Yes, unless he has entered the land in some way, either as mineral or agricultural land.

(Q.)—I am 22 years of age, and have been recently informed that certain real estate belonging to my father, who died twelve years ago, belongs to me. Can I commence suit to establish my rights, or has the statute of limitations run against me. Some have told me that five years after my father died my rights expired?

(A.)—You have five years after you came of age in which to commence suit. The statute did not run during your minority.

(Q.)—Can one who owns a mining claim, a part of which is on a piece of patented land, follow his vein across the line of the patented land and into the same, as long as he keeps within the original boundaries of his claim?

(A.)—Yes. All government patents now issued to agricultural land reserves the right of one who has a vein entering the land to follow the same into said land.

(Q.)—Does a tunnel located after a lode claim have a right of way through the lode claim on the regular line of its bore?

(A.)—This question has not yet been before the Supreme Court of the U. S. Very recently it was tried by the U. S. Circuit Court of Colorado, (Judge Hallett presiding, who is considered good authority on all questions of mining law) and he held, in the case of Portland Gold Mining Company vs. Uintah Tunnel Company, that an injunction would be issued to restrain a tunnel from entering the side line of a prior valid lode claim.

(Q.)—I am the owner of a piece of government land, to which the only accessible way leads over the land of another. I have been using this right of way for two years, and within the last three months I have opened up a quartz mine on my land. The owner of the land, across which I reach mine, now refuses to permit me to use the road over his land—what are my rights?

(A.)—The law gives you an easement across the land of an other to reach and use your land for agricultural purposes, but you have no right to use it for mining purposes. If you wish to do so, you will have to purchase an easement from your neighbor for this purpose. If your land is not patented, you had better, if you have not already done so, locate your mine as a mineral claim, as your agricultural entry will not hold it.

(Q.)—I am executor of an estate that owns several mining claims that are unpatented. I am in doubt whether the same are real or personal property, and whether any suits that may be brought concerning them should be brought in the name of the executor or the heirs.

(A.)—The courts have held mining claims to be real estate, and, therefore, all suits brought or defended, where the title or possession are involved, should be in the name of the heirs and not the executor.

PERSONAL NEWS ITEMS

H. E. PEARSON, of Boston, president of the Boston-Newmarket Mining Company, has been visiting the company's property at Ward, Colo.

P. RYAN, manager, Crown Point Mining Company, Park City, Utah, has returned from the east to Salt Lake City.

L. W. HILLIKER, of the Yolo Mining Co., passed Nogales, en route to San Francisco, last week.

SEELEY W. MUDD, manager of the Small Hopes Consolidated Mining Company, who has been spending a six weeks' vacation in the New England States, has returned to Leadville, Colo.

F. N. GUILD, professor of mineralogy in the University of Arizona, at Tucson, Arizona, has returned home from his trip to California and British Columbia.

W. C. COOK, of the Santa Rosalia mine, returned from San Francisco, remaining en route at Nogales for a few days.

MAX HERRlein, formerly of Butte, Mont., is at present general manager of the Tasmania Smelting Company, a concern that is erecting a 250-ton smelting plant, in the Zeehan-Dundas country, Tasmania.

THOS. J. HURLY, of the Exploration Syndicate, left Silverton, Colo., for New York City last week, whence he goes to Mexico to examine mining properties. Thence he goes to London, England.

Last week the Santa Rosalia Mining Company, of Sonora, Mexico, shipped another carload of high-grade gold ore.

J. G. ALLEN, associate mining engineer of the firm of Mariner & Hoskins, of Chicago, Ill., is at present engaged in professional work in the San Juan County and the Cripple Creek district, Colorado.

J. P. EVANS, of the Colorado Iron Works Co., Denver, Colo., accompanied by his wife and daughter, sailed from San Francisco for Mexico last week.

CHRIS H. MEYER has bonded to George J. Troop, Jr., a group of seven claims in the Patagonia district, Pima county, Arizona, for \$20,000.

WM. VAN SLOOTEN, mining engineer and metallurgist, has left New York to be absent in Sierra County, California, about two months. His trip is in the interest of New York capitalists, who propose to purchase at least two mines in that county.

DR. H. S. PRITCHETT, Superintendent U. S. Coast and Geodetic Survey, was in San Francisco last week, en route to the Hawaiian Islands, under direction of the Secretary of the Treasury, to look after the conditions of the surveys of the islands.

P. HOOK was in Nogales, Ariz., from the Cananea mountains, in Mexico, where he is developing a very promising mining property.

W. R. SHILLING, B. M., the well known mining engineer, assayer and metallurgist, has accepted the position of superintendent under the new management of the Red Rover mine, at Acton, Los Angeles Co., Cal.

MR. LOUIS FADE, chief chemist and director of the Roessler & Hasslacher Chemical Company, has just returned from a trip to Colorado and the Pacific Coast, in company with Mr. Louis Ruhl, the company's western sales agent.

GEORGE F. BEVERAGE, manager of El Urbano Consolidated Mining Company, is developing the properties and doing excellent work. The mines are located about nine miles from Torres in Sonora, Mexico.

H. L. SWAIN, the Ibarra Mining Company's superintendent at Calmali, Lower California, accompanied by Mrs. Swain, is at present sojourning in San Francisco.

H. M. NEITHARDT, the geologist of Lone Grove, Llano County, Texas, is in quest of mineral from California, such as cinnabar, gold, silver, copper, etc., a variety for cabinet specimens. When advised of cost of same, he will remit charges at once.

OBITUARY.

JOSEPH GILBERT, a well known mining man and pioneer, died August 17, twenty-five miles from Guadalupe, Mexico. He was born in Augusta, Me., December 31, 1829, and came to California in 1851, where he was soon after married, and where he had mining interests for a number of years. He was one of the pioneers of Lauder County, Nevada, where he was extensively engaged in stock-raising, and where, in 1876, he was elected to the office of County Treasurer.

In 1881, he disposed of his property in Nevada and came to California, where he was one of the Laguna Farming Company, which consisted of Messrs. Hammel, Denker and other well-known men in Los Angeles. He was superintendent of the ranch during the ten years' lease.

Since then he has taken an active interest in mining, and was one of the owners and the superintendent of the Red Rover mine at Acton, Los Angeles County, Calif.

THE MARKETS.

All quotations, financial reports and other statistical figures given under this head are New York quotations, unless otherwise stated in each item. These figures are carefully revised each issue, and constitute a very accurate compilation of statistical matter.

New York, Aug. 20, 1898.

The following are the Silver, Copper and Lead quotations for the last two weeks.

	SILVER.	COPPER.	LEAD
August 8	\$9	11 25	3 95
" 9	\$9 1/2	11 37 1/2	3 97 1/2
" 10	50 1/2	12 75	4 00
" 11	50 1/2	11 87 1/2	4 05
" 12	50 1/2	11 87 1/2	4 05
" 13	50 1/2	11 87 1/2	4 07
" 14	50 1/2	12 00	4 07 1/2
" 15	50 1/2	12 00	4 07 1/2
" 16	50 1/2	12 00	4 07 1/2
" 17	50 1/2	12 00	4 07 1/2
" 18	50 1/2	12 00	4 07 1/2
" 19	50 1/2	12 00	4 07 1/2
" 20	50 1/2	12 00	4 07 1/2

The market for silver has remained steady and dull this week, without special feature. The prospect of orders for Spanish account gives a firm tone to the market, but, awaiting Spanish tenders, buyers in London have withdrawn orders, causing a slight re-action at the close.

The United States Assay Office in New York reports the total receipts of silver at \$66,000 oz. for the two weeks ending Aug. 20th.

COPPER.

Early in the week some lake copper sold at 11 1/2c., but after that large transactions took place at 12c., and during the last few days producers have refused to go on at that figure, but so far no sales at higher prices are reported. For electrolytic copper we have to quote 11 1/2c. in cakes, wirebars or ingots, and 11.55@11.50c. for cathodes. Casting copper is nominal at 11 1/2c.

LEAD

The firm tendency continues and with very light offerings, consumers encountered difficulties to provide for their wants. There is a good healthy demand and the tendency is very firm. St. Louis reports sales of common at 3.95c. and desilverized at 3.97c. In New York the market is very firm at 4.07 1/2c.

SPELTER

The market has been considerably firmer, as consumption continues very good. While production is still quite large, the output of late, due to some

local causes and a fire at the Empire Zinc Works, has been somewhat curtailed. We have to quote 1.35@1.40c. St. Louis, and 1.62@1.65c., New York.

ANTIMONY.

Antimony continues strong, and we quote Cookson's 93%; Hallett's, U. S. Star and Japanese, 94%.

NICKEL.

Business still continues on unchanged lines and no alteration in prices can be reported. We quote for New York ton lots 33 1/2c. and 36c. per lb and for smaller orders 35 1/2c. and 38c.

TIN.

The tin market has again shown a very firm tendency and in the main higher prices have been recorded. Spot tin in New York has become rather scarce and the heavy stocks which had accumulated have all gone into consumption, so that most of the importers are now dependent upon new arrivals. There being heavy quantities afloat however no scarcity is expected. We quote today 16 1/2@16 1/2c. for spots and 16 1/2@16 1/2c. for futures.

PLATINUM.

Prices are now quoted at \$15 and \$16 per oz., New York. The London quotations are 59 @ 60s per oz. Supplies are not large and prices are firm. For chemical ware, best hammered metal, Messrs. Eimer & Amend of New York furnish the following quotations: In lots of 250 grams or more, 56c. per gram; in lots of 100 grams or more, 57c. per gram; less than 100 grams, 58c. per gram, manufactured platinum will be supplied in same quantities at 2c. less per gram.

POTASSIUM CYANIDE.

Purified, 98@99 per cent., in cases of 12 lb. at 32c. per lb. in 5, 10, 25 and 50 lb. tins at an advance.

QUICKSILVER.

The New York price has been again reduced 50c., and is now \$42 per flask. The London quotation is unchanged at £7 12s. 6d., with the same price named from second hands.

POWDERS.

F. o. b., San Francisco No. 1, 70 per cent. nitro-glycerine per lb., in carload lots, 15 1/2c. less than one ton, 17 1/2c. No. 1* 60 per cent., carload lots, 18 1/2c. less than one ton, 15 1/2c. No. 1** 50 percent., carload lots, 11 1/2c.; less than one ton, 13 1/2c. No. 2, 40 per cent., carload lots, 10c.; less than one ton, 12c. No. 2*, 35 per cent., carload lots, 9 1/2c.; less than one ton, 11 1/2c. No. 2** 30 percent., carload

lots, 10c.; less than one ton, 12c. No. 2**, 20 percent., carload lots, 9c.; less than one ton, 11 1/2c.

SAFETY MATCHES.

Domestic, 58 percent., 50c. to 55c., foreign 55c. to 60c. from dock as to style of package.

lots, 9c.; less than one ton, 11c. Black blasting powder in carload lots, minimum car, 728 kegs, \$1.50 per keg; less car lots, \$2 per keg.

COKE.

Trade in coke has been a little more active the past week, and the outlook seems to indicate still further improvement.

IN CAR LOTS, ST. LOUIS.

Connellsville fly coke 72 hr. frv. \$1.83
New River....\$1.00 Pocahontas....3.90
Crushed.....4.85

Gas works coke, lump, per bushel.. 10

BORAX.

The San Francisco market in Borax is firm with a good demand.

The market is quoted as follows:

Refined, in carload lots, in barrels.....7 1/2
Refined, in carload lots, in sacks.....7 1/2
Powdered, in car lots.....7 1/2
Concentrated, in car lots.....7 1/2

THE MINOR METALS.

Quotations are given below for New York delivery

Aluminum: No. 1, 95 per cent. Ingots, per lb.3 1/2@4 1/2
No. 1, 95 per cent. Bars, per lb.3 1/2@4 1/2
Rolled sheets, per lb.3 1/2 up
Aluminum-Nickel, per lb.3 1/2@3 1/2
Bismuth, per lb.3 1/2@4 1/2
Phosphorus, per lb.4 1/2@5 1/2
Tungsten, per lb.7 1/2
Perlo-tungsten, 60 per cent.6 1/2

Variations in price depend chiefly on the size of the order.

CHEMICALS.

There has been an improved demand for nearly all these goods and the imports of bleaching powder especially have been large. Exports of alkali continue fair, and bicarb. soda also shows a good inquiry in this direction. Orders for forward delivery of caustic soda are coming in more freely, especially for domestic high test.

Quotations generally are as follows:

CAUSTIC SODA.

Quotations for Caustic soda domestic high test are \$1.40 @ 1.50 per hundred lbs.

ALKALI.

Domestic, 58 percent., 50c. to 55c., foreign 55c. to 60c. from dock as to style of package.

CARBONATED SODA ASH.

58 per cent., 90c. and 95c. per 100 lbs. basis 48 per cent.

BI-CARBONATE OF SODA.

English, \$2.12 1/2@2.25 per 100 lb. American, bulk \$1.25 and \$1.50 per 100 lbs. according to brand.

SAL SODA.

For domestic, 50c. per 100 lbs., less usual discounts; English, 6 1/2c. and 6 5c. Concentrated sal soda, \$1.60 @ \$1.65 per 100 lbs.

CHLORIDE OF POTASH.

Chlorate of potash is quoted at \$9.25 and \$9.50 per 100 lbs.

CHLORIDE OF LIME.

English prime brands \$1.55@\$1.60, Ordinary, \$1.70@\$1.80; Continental, \$1.50@\$1.60 per 100 lbs.

Acids.

Attention is directed to the proposed combination of leading makers, but as yet no change is noted in prices. Business moves in the same channels, and deliveries of sulphuric acid have been larger owing to the continued warm weather.

Quotations are per 100 lb from New York and vicinity as follows: Acetic acid, commercial, No. 8, \$1.10@\$1.15; 20° muriatic acid, 18°, \$1.10@\$1.15; 20° sulphuric acid, 18°, \$1.20@\$1.25; 22°, \$1.35@\$2.25, according to quantity and brand. Nitric acid, 36°, \$3.50@\$4.75; 38°, \$3.75@\$4.25; 40°, \$4.40@\$4.87 1/2; 42°, \$4.62@\$5.12; 45°, \$5.25@\$5.75. Mixed acids, according to mixture. Sulphuric acid, 66°, \$1.10 for drums and \$1.15@\$1.75 for barrels. Chamber acid 50°, in jobbing way, \$11.50@\$12 per ton f. o. b. factory. Blue vitriol \$3.50@\$3.62 1/2 for extra grades and \$3.37 1/2 for ordinary.

BRIMSTONE.

Market is dull and prices practically unchanged. For best unmixed seconds, \$21@\$21 a ton is quoted, and \$19@\$19.50 for thirds. No arrival of crude brimstone this week, but 290,000 kilos of iron pyrites came to hand from Genoa, Italy.

MURIATE OF POTASH.

We quote per 100 lbs. on basis of 80 per cent., as follows: New York and Boston, \$1.78 for 80@85 per cent., and \$1.81c. for 95 per cent.; Norfolk and Philadelphia, \$1.76 1/2 for 80@85 per cent., and \$1.79 1/2 for 95 per cent.; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.78 1/2 for 80@85 per cent., and \$1.81 1/2 for 95 per cent. All for lots of 50 tons and upward.

KAINIT.

Invoiced weights as taken at port of shipment per ton of 2,240 lbs. testing 12.4 per cent. actual potash, equivalent

BELTING Leather, * Cotton, Rawhide, etc. **ALSO** Lace Leather **TELEPHONE 562**
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THE MINING AND METALLURGICAL JOURNAL

to 23 per cent. sulphate of potash, \$8.00 to \$8.80 for New York and Boston; \$2.00 to \$9.15 for Norfolk, and Philadelphia, and \$9.05 to \$9.30 for Charleston, Savannah, Wilmington, N. C., and New Orleans.

NITRATE OF SODA.

Spot nitrate is in ample supply and buyers have the upper hand for the present. We have again to quote a little lower price, \$1.50 to \$1.55 per 100 lbs. for spot. The same figures are quoted for futures, in view of the quantities known to be afloat for New York.

FINANCIAL NOTES.

The statement of the United States Treasury, on Thursday, August 18th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Aug. 18	Changes	
Gold.....	\$160,403,050	\$1,325,061	
Silver.....	10,728,178	D. 1,429,832	
Legal Tenders.....	50,491,822	L. 3,480,477	
Treasury Notes, etc.....	4,343,377	D.	
Totals	\$266,008,656	1. \$13,361,773	

Treasury deposits with national banks amounted to \$61,081,877, an increase of \$1,025,165 during this week.

There has been a steady gain in the cash balance of the Treasury from the proceeds of the new bonds. It is estimated that about \$125,000,000 has been received thus far from these bonds. At present bonds of \$500 or less are only being distributed to subscribers. Notices of allotment are, however, still going out for the larger amounts, but the bonds themselves will not be dispatched until the small bonds have been distributed.

Experiments are now being carried on by the United States Government to make coins of the smaller denominations out of an alloy of copper, zinc, ferro-manganese and aluminum.

Average Monthly Prices of Silver.

In New York per ounce Troy, from January 1st, 1898, and for the years 1897 and 1896:

Month.	1898		1897		1896	
	Cents	Per oz.	Cents	Per oz.	Cents	Per oz.
January.....	61.07	64.67	61.79	67.00	67.18	71.18
February.....	61.07	64.67	61.79	67.00	67.18	71.18
March.....	61.00	63.08	68.40	70.00	70.00	70.00
April.....	61.02	61.86	67.92	70.00	70.00	70.00
May.....	61.93	61.12	67.78	69.00	69.00	69.00
June.....	61.61	60.10	68.69	69.69	69.69	69.69
July.....	61.00	61.61	69.76	70.00	70.00	70.00
August.....	61.19	67.34	69.76	70.00	70.00	70.00
September.....	61.21	65.68	69.76	70.00	70.00	70.00
October.....	67.57	66.05	69.76	70.00	70.00	70.00
November.....	57.01	64.93	69.76	70.00	70.00	70.00
December.....	68.01	65.24	69.76	70.00	70.00	70.00
Year.....	60.79		67.73			

Average Prices of Metals per lb. in New York.

Month	Copper	Tin	Lead	Spelter
January.....	10.99	13.87	3.65	3.96
February.....	11.28	14.08	3.71	4.04
March.....	11.95	14.38	3.72	4.25
April.....	12.14	14.60	3.63	4.26
May.....	12.00	14.52	3.64	4.27
June.....	11.85	15.22	3.82	4.77
July.....	11.63	15.60	3.95	4.66

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Chas. P. Grimwood,

Mining Engineer and Metallurgist

Laboratory, 214 Pine Street,

SAN FRANCISCO, CAL.

Gold and Silver Exports and Imports. At all United States ports, June, 1898, and years from January 1st, 1898 and 1897.

	Coin and Bullion	In Ores
	Exp.	Imp.
Gold	\$75,529	\$1,184,774
1898	6,049,560	90,714,751
1897	25,000,717	3,715,240
Silver		
June.....	4,150,650	759,755
1898	21,392,998	3,021,116
1897	27,594,900	4,419,592

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Exports of specie from San Francisco for the month of July were as follows:

	Gold	Silver	Total
To Hong Kong.....	\$8,570	\$1,500,818	\$1,509,388
To Honolulu.....	100,000	1,000	101,000
To Central America.....	7,000	7,000	14,000
To Mexico.....	500	500	1,000
To New York.....	2,348,508	1,000	2,349,508

Totals..... \$2,457,628 \$1,513,465 \$3,971,093

The silver included \$365,088 in bars, \$1,534,218 in Mexican dollars, \$8,600 in Peruvian soles, and \$5,500 in United States coin. Of the gold \$2,263,638 was in coin and \$4,000 in bullion. All the gold bullion went to New York.

The gold exported for the week went to the West Indies and the silver went chiefly to London. Of the gold imported, \$1,484,283 came from Great Britain and \$121,650 from Germany; the balance, together with the silver, came from Central and South America and the West Indies.

Exports of quicksilver from San Francisco in July and the seven months of the year were as follows (in flasks of 76½ lbs.):

	July	Seven months
To Mexico.....	101	2,862
To Central America.....	125	856
To New York.....	100	25
To British Columbia.....	3	100
To New Zealand.....	100	30
Totals	299	3,872
Total in 1897.....	425	3,072

The total value of the seven months' exports was \$140,266 or \$30,127 more than for the corresponding period last year.

MINING STOCK MARKETS.

SAN FRANCISCO, CAL., Aug. 23d, 1898. Mining stocks were dull and unchanged as usual.

The Welsbach Commercial Company has declared a quarterly dividend of 2½ per cent. on its preferred stock, payable September 9.

The delinquent assessment sales of the Chollar and Belcher mining companies will be held today.

The official letter from the Sierra Nevada mine for the week says: Riley Tunnel during the week extracted 18 mining cars of ore from the sixth and seventh floors and deposited it in the ore-house at the mine. The average assay of samples taken from the face was gold, \$63.63; silver, 8.14 ounces per ton. Work on the

building at the old shaft is progressing as rapidly as possible. Have secured a man of some experience and will mill it as soon as arrangements for so doing can be made. The south lateral drift was advanced 40 feet; total length 130 feet; face in quartz and porphyry of low assay value. 900-foot level—The north lateral drift has been advanced 10 feet; total length 130 feet; face in quartz and porphyry.

In the Alta mine they are extracting from the 825-foot level. The assays are \$7 in gold and 3 ounces of silver per ton. The mill will start today.

Brunswick lode—Gould & Currie, Best & Belcher and Savage-Sutro tunnel level—The joint west cross-cut started at a point 194 feet north of the tunnel line in the north drift has been advanced 13 feet; total length, 77 feet; face in porphyry.

Chollar and Potosi—800-foot level—The main south drift has been advanced 15 feet and is now out 48 feet south of the Chollar north boundary, face in porphyry.

Occidental Con.—The weekly letter says: "From the stopes above the 550 level we have extracted and milled 90 tons of ore, of the average assay value of \$8.20 per ton, as per battery samples."

BOSTON, MASS., Aug. 18.

In sympathy with the general stock market we have had a most remarkable week in copper stocks, the highest recorded prices being in cases attained and large advances made in other stocks. To-day profit taking has been quite noticeable, and sharp declines recorded; yet on the whole the market holds well and closes at material advances compared with last week. Calumet & Hecla found \$600 a share an easy figure to reach, and closes without reaction. The fluctuations in Boston & Montana have been violent in the extreme. After an opening at \$213 the stock boomed at \$228, later declining to \$221 with a subsequent advance the same day to \$229¾, and gradually sagged off on profit taking to \$223½ at the close. Osceola jumped from \$52 to \$59½ and settled to \$56, with good buying on the decline. Centennial moved ahead to \$19½ and closes strong. Old Dominion is steady at about \$27, after selling at \$29. A market advance was made in Tamarack, from \$163 to \$172, with reaction to \$167. Arnold is stronger at \$18 and Franklin moved up to \$14½, which was at the close. Atlantic sold at \$28½ to \$29½; Parrot at \$22½. Baltic advanced to \$20, but dropped off again \$18, which is lower than last week. Teckumch has been quite active, and is in demand at \$31½ to \$4. Humboldt sold at \$5½. Alloway at \$1½ and Ashland at \$3. Quicksilver stocks are neglected. Gold stocks are more active at higher prices. Merced sharply advanced from \$6 to \$8, and closed at \$7¾. Victor sold unchanged at \$6½. Pioneer is higher at \$5½. Ysabel at \$5½ to \$6, and Cochiti at \$10 to \$9½.

Copper property in Mexico. A one-half interest in a good producing copper property will be given for required capital to do the necessary development work and placing machinery thereon. Substantial guarantee. Address: "Miner," 1013 Mission St., San Francisco, Cal.

If you want mining machinery of the first class address the MINING AND METALLURGICAL JOURNAL, stating the purpose to which it is to be applied, and you will be placed in communication with the leading manufacturers of repute. All the latest catalogues of mining machinery are kept constantly on hand.

The JOURNAL's advertising pages represent the cream of the trade, and nearly everything needed by miners, millmen and smelters can be found in them; in fact they constitute the best directory published in the West of mining machinery manufacturers.

WANTS

Advertisements of this class containing not more than five lines will be inserted for not exceeding three months in any year, free of charge, to all paid-up annual subscribers.

Other than above \$1.00 per month will be charged.

Advertisements not accepted for less than one month.

WANTED—Position as Assayer and Chemist reference upon application. Address: VICTOR R. JOURNAL OFFICE, Los Angeles, Cal.

WANTED—by a young experienced man, position as quartz mill man, one who can keep mill running. Address: A. E. CHARLESWORTH, FLOCKWOOD, CAL.

WANTED—by a young man, a position as Assayer, etc.; experienced, competent and has a good knowledge of all metallurgical operations. Good references. Address: T. K. JOURNAL OFFICE, Stimson Block, LOS ANGELES, CAL.

WANTED—Situation by Millman and Assayer; Wages reasonable; Good references. Address: "H" JOURNAL OFFICE

EXPERIENCED Assayer and Cyanide operator desires engagement. The successful and economical treatment of slimy ore or tailings by cyanide n special.

VICTOR, W. V. WATSON, H. White Pine Co., Nev.

A EDUCATED Chemist and Millman, thoroughly understands Milling, Chlorination and Cyanide Processes. Twelve years experience in Montana and Colorado, now open to an engagement. Moderate salary. Address: "Chemist," JOURNAL OFFICE, P. O. Box 887, Los Angeles, Cal.

FOR SALE!

I HAVE some good gold mining properties for sale at reasonable prices, some developed and some real good properties at Ward, Eldora, Gold Hill, Jamestown, Magnolia, Caribou and Sugar Loaf. Write stating what you want or call on me. JAMES M. NORTH, FORMER COUNTY JUDGE, ROBLIN, COLOR.

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MILLS. A Practical BEARING that RUNS WITHOUT OIL

The Graphite Lubricating Company

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Barometers, Thermometers, Field Glasses, Microscopes and Accessories. Repairing

Promptly Done.

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Geologist and Mining Engineer.

Mines Examined and Reported on.

COLTON, CALIFORNIA

A. A. WARREN

ASSAYER AND ANALYTICAL CHEMIST

COLTON, CALIFORNIA

MINING STOCK QUOTATIONS

BOSTON

Aetna Con	—	do, right	55
Allies	7 38	Gold Coln	100
Am. Canada	18 68	Humboldt	475
Arnold	18 68	Illinoian Steel	80 00
Ash Red	3 38	Lake Sup Iron	—
Atlantic	28 00	Merced	—
Baltic	17 68	National	75
Banana	—	New Irlia M.	—
Boston and C	—	Old Dominion	28 00
Boston & Mont'gall	21 75	Orcilla	65 25
Butte & Boston	22 60	Pioneer	5 75
Cathcart & Hechelt	18 68	Pioneer	118 12
Catalpa	16 50	San Ysidro	—
Centennial	24 00	Tamarack	165 00
Dominion Coal	24 00	Tecumseh	2 00
Dominion Pref	18 25	Wolverine	27 00

NEW YORK

Alamo	—	Homestake	28 50
Alice	—	Iron Silver	—
Annette	—	Mexican	20
Best & Belcher	—	Mollie Gibson	18
Bird's Nest	—	Ontario	4 50
Bolton	—	Opie	—
Crown Point	—	Pharmacist	10
Con. Cal. & Va.	—	Plymouth	—
Cripple Creek Con	—	Quicksilver	3 00
Dealwood	—	Ridgway	11 00
Favorite	11 25	Sierra Nevada	—
Fortuna	—	Standard	1 80
Golden Fleece	45	Union Con	—
Gould & Curry	45	Yellow Jacket	—
Hale & Northco	—	—	—

SAN FRANCISCO

Alpha	—	Con. Id. & Curry	14
Alpha Con	10	Hale & Northco	1 65
Andes	61	Justice	—
Belcher	23	Mexican	14
Best & Belcher	78	Occidental	52
Boole	—	Ophir	25
Bullion	10	Potosi	20
Catlow	52	Savage	12
Challenge	13	Sierra Nevada	67
Chollar	19	Silver Hill	10
Confidence	40	Union Con	20
Con. Cal. & Va.	10	Utah	06
Crown Point	10	Yellow Jacket	19

COLORADO SPRINGS STOCKS

Acacia	—	Gold Hill	23
Alamo	—	Jack Pot	175
American Con.	—	Little	89
Anaconda	37	Kamloops	92
Argentum Junta	20	Magnet Rock	668
Banner	—	Matoa	225
Big Three	—	Mineral Rock	—
Bl. Bird	—	Moutain Beauty	91
Brace	—	Mollie Gibson	194
Bute	—	Moon Anchors	97
Caledonia Con.	—	Moon Rose	12
Colonna	—	Mountain Star	—
Comandante	—	Mayflower	15
Della Colia	—	McLise Queen	95
Delaware	—	Monte Christo	95
Eastern Star	—	Morning Star	—
Eldorado	—	Mugwump	24
Elkton Con.	—	Neas High	18
Emmett	—	Northern Belle	125
Franklin	—	Novelty	12
Golden Crater	—	Palo Alto	20
Golden Fleece	22	Red Mount	19
Gold & Globe	—	Red Rock Point	15
Gold King	—	Ridge	15
Gould	—	Rio Grande	10
Granite Hill	—	Rio Grande, Red Mt.	20
Hayden Con.	—	Roaring Mountain	10

SALT LAKE CITY

Alice	80	Malcom	—
Ajax	34	Mammoth	1 90
Anchor	—	Maxfield	—
Archon	17	Mearns	7 27
Buckeye	02	Morgan	—
Bull, Beck	8 20	Northern Light	10
Cent. Banks	26	Omaha	28
Chloride Polat	88	Oriental	4 10
Dalton	91	Overland	—
Dickson	73	Richmond Annex	—
Daily West	20	Ridge	93
Dalton & Lark	05	Rover	—
Doxor	120	Sacramento	15
Eagle	03	Silver King	18 50
Eureka Hill	—	Slimon	—
Four Aces	64	Sonneborn	95
Galena	45	Sunshine	25
Gemini	—	Swansea	2 50
Geyer-Marion	70	T. S. Swanson	1 20
Grand Central	6 05	Utah	95
Homestake	—	Utah Con	—
Horn Silver	135	Vader	26
Little Pittsburg	82	Young America	575

ORE TESTING

Complete mill for testing ores on practical scale by all processes to determine the best process adapted to treating any ore submitted. Processes in use investigated to overcome unnecessary losses, etc.

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NEW YORK CITY

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Krogh Manufacturing Company

Successor to San Francisco Tool Co.'s Machine & Mfg. Dept.

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Briggs' 2-Stamp Triple-Discharge Quartz Mill, of latest improved pattern; Rock Breakers, Ore Feeders, Concentrators, Hoppers and Bolters, Hoisting Rigs to be operated by Horse, Steam Power or any other motor; Ore Cars and Ore Baskets, Cornish and Jack-head Pumps, Triple-acting Pumps, Centrifugal Sand and Gravel Pumps, Wooden Tanks and Pumps for the Cyanide Process, Pipe and Gate Valves, Link Chain Elevators for elevating and conveying all kinds of material. Estimates as to cost of machinery and its erection furnished upon application. Write for Catalogue and Prices.

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San Francisco, Cal.

At Wholesale Prices

Mining Timbers a Specialty

Write for Price

FROM CRIPPLE CREEK

AIR COMPRESSORS,
ROCK DRILLS,
Stone Channelers,
The Pohle Air Lift Pump,
Coal Cutters,

The Ingersoll-Sergeant Drill Co., HAVEMEYER BUILD'G.
NEW YORK.

ROSSLAND, BRITISH COLUMBIA.

Alberta	95	Jose Mac	122
B.C. Gold King	97	Josie	50
Beaver	10	Jumbo	75
Big Three	10	Knight Templar	98
Bl. Bird	—	Kootenay London	—
Brace	10	Le Roil	8 10
Bute	—	Lily May	18
Caledonia Con.	95	Mabel	15
Colonna	—	Mayflower	10
Commander	—	Maria	10
Della Colia	92	Novelty	10
Delaware	12	O. K.	—
Eastern Star	20	Palo Alto	05
Eldorado	20	Pioneer	10
Elkton Con.	93	Poorman	—
Faraday	—	Princess	—
Golden Drip	15	Ridge	11 10
Gold Mine	95	Rio Grande	—
Gold Rock	—	Rio Grande, Red Mt.	—
Grand Prince	95	St. Elmo	—
Great Western	98	Saint Paul	—
Hartle Brown	—	Silver Bell	—
Helen	94	Silverine	—
High Ore	94 1/2	S. C. Cross & W. Con.	—
Imperial	10	Virginia	—
Iron Horse	20	Wat. Eagle Con.	—
Iron Mask	28	West Le Roil	21
I. X. L.	10	White Bear	11

Ironwood	92	Jack Pot	92
Jack Pot	—	Work	92

MEXICO

Name of Company	State	Date
Almirez	Hidalgo	5
Amitida y Concordia	"	29
Angustias	Guadalajara	390
Arevalo y Anexas	Hidalgo	240
Asturiano y Anexas	Zacatecas	170
Barrilona y Colon	Durango	150
Barrilona y Meza	Hidalgo	100
Cabazon y An.	Zacatecas	30
Cerro de los Pinos	Hidalgo	180
Cerro Colorado	Chihuahua	10
Cerro Sonora y An.	Guanajuato	480
Concepcion y Anexas	S. Luis Potosi	100
El Oro	Guanajuato	40
Esparanza y An.	Mexico	1,300
Guadalupe	Guanajuato	180
Huentita	Santa Ana	100
Luz de Borda	Mexican	40
Luz de Maravillas	Hidalgo	100
Pobedon	"	160
Palma	Zacatecas	100
Panama de la Cumbre	"	5
Real del Monte	Hidalgo	900
Rebolledo	"	5
Restauradora	Durango	60
San Francisco	Hidalgo	270
S. Ped. Chalchihuites	"	12
San Rafael y Anexas	Hidalgo	925
do. Free Stock	"	400
San Rafael del Oro	Hidalgo	20
S. Luis Potosi	S. Luis Potosi	850
Siete I.	Durango	50
Solidad	Hidalgo	500
Surpresa	Guanajuato	250
Trifield	"	40
Tlaxiango	Puebla	27
Union	Hidalgo	260
Zonelhuaro (gold)	Vera Cruz	100
Zona Min. de Hornos	Guanajuato	15

NOTE. The above Mexican stocks are figured to the basis of Mexican silver.

BRANCH OFFICES

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521 1st AVENUE, SPOKANE, WASH.

The Southern California Lumber Co., Stimson Bld., Los Angeles, Cal., Chas. Wier Manager, sells

LUMBER

New Catalogue No. 32

New Catalogue No. 41

Pamphlet No. 100

Catalogue No. 72

Special.

Mining Timbers a Specialty

Write for Price

JAMES H. BURNS, Pres. & Gen. Mgr. Frank T. Beck, Secy. & Treas.

THE PORTLAND GOLD MINING CO., (Stock Transfer Office, Colorado Springs.)

Mines at Victor, Colorado

COLORADO SPRINGS, COLO., May 19, 1898

The Ingersoll-Sergeant Drill Co.

Gentlemen:- We bought two years ago one of the largest size of the straight and true "I" Ingersoll-Sergeant Drills.

This was found to be too small for our needs about a year ago we purchased of you a Duplex Corliss Corliss machine 100 x 100 1/2 x 1/2.

This was the place on our claim near the Cripple Creek District, 10,000 feet above the level of the sea, and has been running continuously ever since, and at times over 100 ft. per minute. The steam cylinders were connected to an independent jet condenser, for which we are using the more water, and the resultant economy of operation is very noticeable.

The operation of this Compressor is as near perfect as that of any machine we have ever seen, and this type is well worth the extra cost on account of the great permanent economy in operation.

Our miners are equipped exclusively with your drills and we have only the highest words of praise to give them.

Yours very truly, THE PORTLAND GOLD MINING CO., Jas. A. Burns, President

INCORPORATED MINES PAYING DIVIDENDS.

NAME OF MINES	LOCATION	No. of Shares	Capital Stock	Par Value	Amount of Last Dividend	Date of Last Dividend	Total Amount Paid on Dividends	Kind of Mineral Produced
1 Aetna Coma	California	100,000	\$ 500,000	\$ 5	\$ 10	July 1898	\$ 110,000	G.
2 Alaska, Treadwell	Alaska	200,000	5,000,000	25	37½	April 1898	3,475,000	G.
3 Alaska Mexican	Alaska	200,000	1,000,000	5	10	April 1898	297,031	G.
4 Alice	Montana	400,000	10,000,000	25	55	April 1898	1,075,000	G. S.
5 Alice	Utah	400,000	10,000,000	25	55	April 1898	1,075,000	S. L. G.
6 Anaconda	Montana	1,200,000	30,000,000	25	1 25	May 1898	6,750,000	G.
7 Anchorage Leland	Colorado	600,000	600,000	1	01	July 1898	111,000	G.
8 American Gold	Colorado	300,000	3,000,000	10	02	May 1898	291,000	G. S. L.
9 Atlantic	Michigan	40,000	1,000,000	25	1 00	Feb. 1898	78,000	S.
10 Bald Butte	Montana	250,000	250,000	1	03	Sept. 1897	512,500	G. C. S.
11 Bangkok G-Bell	Colorado	600,000	600,000	1	01	July 1898	107,510	S. L. C.
12 Big Six	Colorado	500,000	500,000	1	00½	May 1898	15,000	G. S.
13 Boston & Montana	Montana	150,000	3,750,000	25	3 00	May 1898	7,625,000	G. C. S.
14 Bullion Beck and Champion	Utah	100,000	1,000,000	10	50	Mar 1897	2,485,000	G. S.
15 Bunker Hill and Sullivan	Idaho	300,000	3,000,000	10	50	July 1898	495,000	S. L.
16 Caribou	British Col.	>10,000	800,000	1	02	May 1898	201,955	G.
17 Calumet & Hecla	Michigan	10,000	2,500,000	25	10 00	June 1898	53,850,000	G.
18 Centennial Eureka	Utah	30,000	1,500,000	50	1 00	Mar 1897	2,010,000	S. L.
19 Central Lead	Missouri	4,000	400,000	100	1 00	Apr 1898	10,000	L.
20 Charleston	South Car.	10,000	1,000,000	100	1 00	Feb. 1897	150,000	..
21 Champion	California	34,000	840,000	10	25	April 1898	296,200	G.
22 Chloride Point	Utah	600,000	500,000	1	01	Dec. 1897	5,000	G. S.
23 Colorado Sun	Montana	100,000	1,000,000	10	50	June 1898	1,595,000	G. S. C.
24 Crescent	Utah	24,000	600,000	25	..	July 1897	289,000	..
25 Crown King	Arizona	600,000	6,000,000	10	02	June 1898	140,000	G. S. L.
26 Daly	Utah	150,000	3,000,000	20	25	Mar 1897	2,925,000	S. L.
27 Deadwood Terra	S. Dakota	200,000	5,000,000	25	55	May 1898	1,330,000	G.
28 De Lamar	Idaho	400,000	2,000,000	5	29	May 1898	2,151,600	S. L.
29 Elkhorn Consolidated	Colorado	1,250,000	1,250,000	1	01½	July 1898	555,710	G. S.
30 El Paso	Colorado	650,000	650,000	1	01	Jan 1893	12,093	G. S.
31 Empire State	Idaho	75,000	750,000	10	10	June 1898	7,500	..
32 Fern	British Col.	200,000	200,000	1	05	Jan 1898	10,000	..
33 Florence	Montana	500,000	2,500,000	5	01	May 1897	132,530	S.
34 Geyser-Marion	Utah	300,000	1,500,000	5	02	May 1898	81,000	G.
35 Gold Coin of Victor	Colorado	1,000,000	1,000,000	1	01	June 1898	80,000	G.
36 Golden Cycle	Colorado	21,000	1,000,000	5	00½	June 1898	150,000	..
37 Gold Coast	Colorado	200,000	1,000,000	5	05	Nov 1897	160,000	G. S.
38 Gold and Globe	Colorado	750,000	750,000	1	3-10	July 1897	51,025	G.
39 Golden Reward	S. Dakota	..	1,000,000	..	15	Feb 1898	155,000	G.
40 Hecla Consolidated	Montana	30,000	1,500,000	50	50	Feb 1897	2,175,000	S. G. L. C.
41 Helena & Frisco	Idaho	500,000	2,500,000	5	04	August 1890	475,000	S. L.
42 Highland	S. Dakota	100,000	10,000,000	100	20	June 1898	3,664,718	G.
43 Holy Terror	S. Dakota	300,000	300,000	1	03	July 1898	99,000	G.
44 Homestake	S. Dakota	125,000	12,500,000	100	50	June 1898	6,806,250	G.
45 Hope	Montana	100,000	1,000,000	10	10	Mar 1898	762,252	S.
46 Horn Silver	Utah	400,000	10,000,000	25	05	April 1898	5,120,000	S. L.
47 Idaho	British Col.	500,000	500,000	1	05	May 1898	261,000	..
48 Iowa	Colorado	1,000,000	1,000,000	1	00½	June 1898	90,000	G.
49 Iron Mountain	Montana	500,000	5,000,000	10	1 00	Jan 1898	591,100	S.
50 Isabella	Colorado	2,250,000	2,250,000	1	00½	June 1897	270,000	G.
51 Kearsarge	Michigan	40,000	1,000,000	25	10	Aug 1897	180,000	C.
52 Last Chance	British Col.	500,000	500,000	1	04	Jan 1897	12,000	S. L.
53 Le Roi	British Col.	600,000	2,500,000	5	10	Apr 1898	775,000	G.
54 Lille	Colorado	1,000,000	1,000,000	1	01	July 1898	99,100	G.
55 Minnesota	Minnesota	180,000	16,500,000	100	1 50	July 1898	3,735,000	L.
56 Montana Ltd	Montana	680,000	3,300,000	5	05½	May 1898	2,997,557	G. S.
57 Montana Ore Purchasing	Montana	40,000	1,000,000	25	1 00	July 1898	780,000	..
58 Morning Star	California	2,400	210,000	100	5 00	June 1898	664,600	G.
59 Mt. Rosa	Colorado	1,000,000	1,000,000	1	02	Jan 1898	60,000	G.
60 Mercur	Utah	200,000	5,000,000	25	18	May 1898	1,068,000	G.
61 Mammoth	Utah	400,000	10,000,000	25	05	June 1898	1,250,000	G. S. C. L.
62 Moon Anchor Gold	Colorado	600,000	600,000	1	07½	July 1898	216,000	G.
63 New Elkhorn	Colorado	300,000	1,500,000	5	24	Sep. 1898	72,000	G.
64 New York & Hon. Rosario	Central A.	150,000	1,500,000	10	10	July 1898	930,000	S. G.
65 Napa	California	100,000	700,000	7	20	July 1898	930,000	Q.
66 New Idria Quicksilver	California	100,000	500,000	5	10	July 1898	60,000	Q.
67 Ontario	Utah	150,000	15,000,000	100	75	Dec. 1897	13,542,500	S. L.
68 Osceola	Michigan	50,000	1,250,000	25	1 00	June 1898	2,272,500	C.
69 Parrot	Montana	230,000	2,300,000	10	30	July 1898	2,000,898	C.
70 Pennsylvania Consolidated	California	51,500	5,150,000	10	05	June 1898	38,775	..
71 Portland	Colorado	3,000,000	3,000,000	1	01½	June 1898	1,492,898	G. S.
72 Princess	Colorado	1,000,000	1,000,000	1	00½	Feb 1897	45,000	G.
73 Quincy	Idaho	100,000	2,500,000	25	3 00	Feb. 1898	9,370,000	C.
74 Rambler-Cariboo	British Col.	1,000,000	1,000,000	1	02	April 1897	40,000	..
75 Raven	Colorado	1,500,000	1,500,000	1	01	March 1898	20,000	G.
76 Reco	British Col.	1,000,000	1,000,000	1	10	Jan 1898	287,500	S. L.
77 Sacramento	Utah	1,000,000	5,000,000	5	00½	June 1898	35,000	G.
78 Santa Rosalia	California	100,000	100,000	1	10	Feb. 1898	125,000	G. S.
79 Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	June 1898	3,400,000	S.
80 South Swansea	Utah	150,000	150,000	1	05	April 1898	90,000	S. L.
81 Standard	California	200,000	20,000,000	100	10	Mar 1898	5,651,910	G. S.
82 St. Joseph	Missouri	250,000	2,500,000	10	15	Oct 1897	24,000	L.
83 Silver King	Utah	150,000	3,000,000	20	25	June 1898	1,575,000	S. L. G.
84 Sloane Star	British Col.	2,000,000	1,000,000	0.60	05	Mar 1897	350,000	..
85 Smuggler	Colorado	1,000,000	1,000,000	1	01	June 1898	1,035,000	S. L. Z.
86 Snuggler Union	Colorado	50,000	5,000,000	100	1,00	Oct 1898	150,000	G. S.
87 Swansea	Utah	100,000	500,000	6	05	June 1898	100,000	S. L.
88 Tom Boy	Colorado	200,000	2,000,000	10	10	Dec 1898	600,000	G.
89 Tamarack	Michigan	60,000	1,600,000	15	3 00	June 1898	5,330,000	C.
90 Union	Colorado	1,250,000	1,250,000	1	01	June 1898	73,000	S.
91 Utah	Utah	100,000	1,000,000	20	01	Dec. 1897	177,000	G. S.
92 Utah Consolidated	Utah	30,000	150,000	5	02	Sept 1896	3,010	S. L.
93 Victor	Colorado	200,000	1,000,000	6	50	June 1898	955,000	G.
94 Vindicator	Colorado	1,500,000	1,500,000	1	05	July 1898	76,125	G.
95 Western Mine Enterprise	Montana	600,000	600,000	1	20	Jan 1898	48,880	..
96 War Eagle	British Col.	500,000	500,000	1	01½	July 1898	261,750	..
97 White Water	British Col.	125,000	625,000	5	82	April 1898	194,000	..

S, Silver.

G, Gold.

L, Lead.

C, Copper.

Q, Quicksilver.

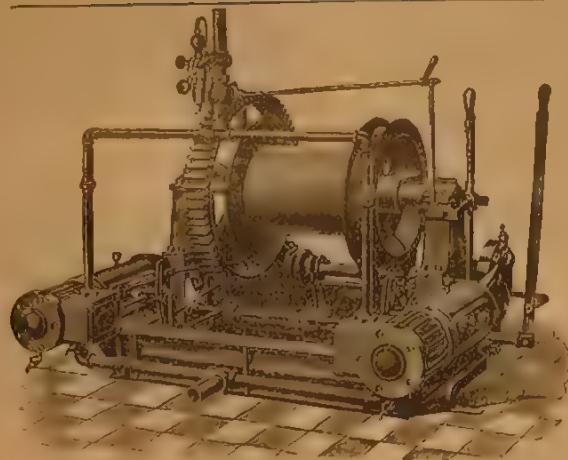
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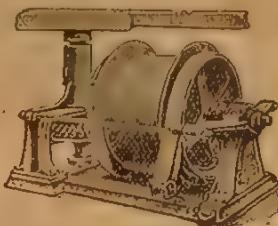
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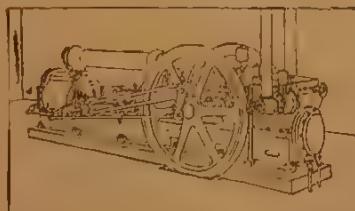
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Arrive St. Elmo, 8:26 p.m.
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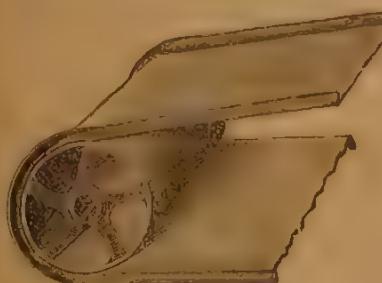
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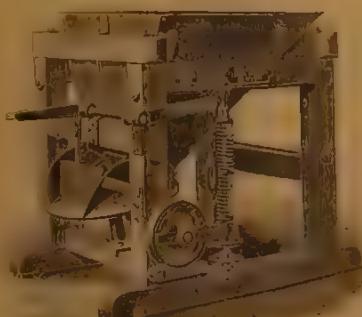
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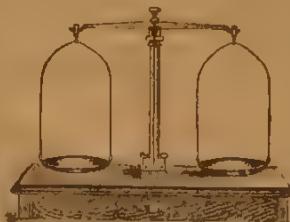
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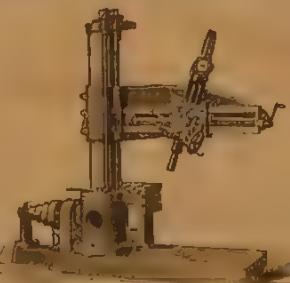
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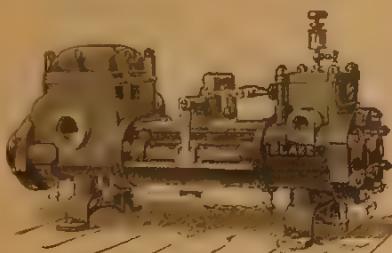
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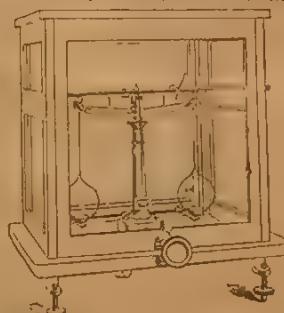
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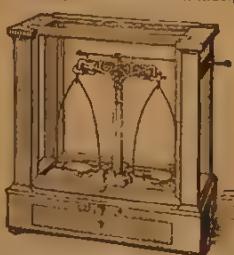
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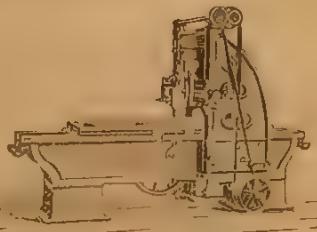
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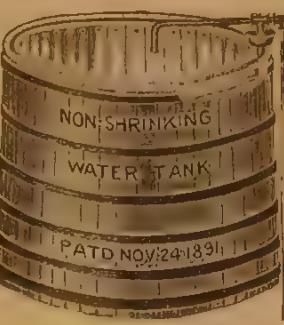
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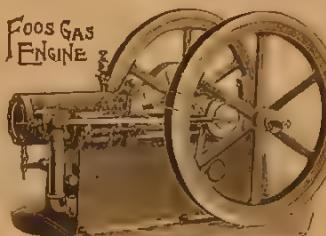
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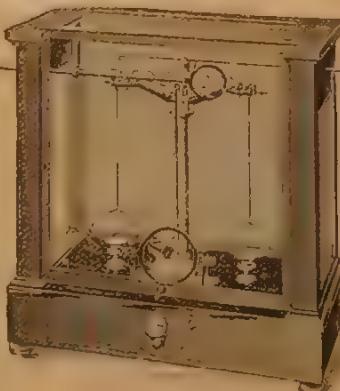
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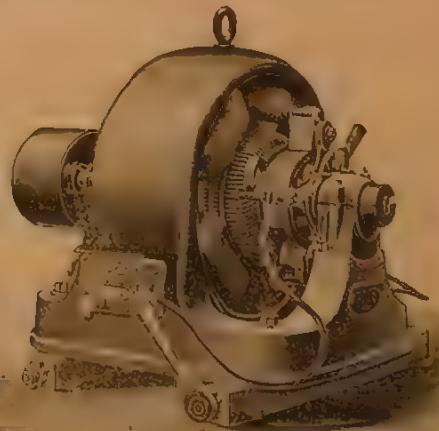
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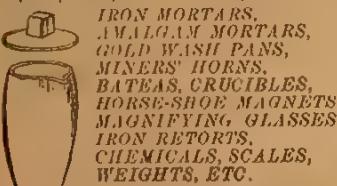
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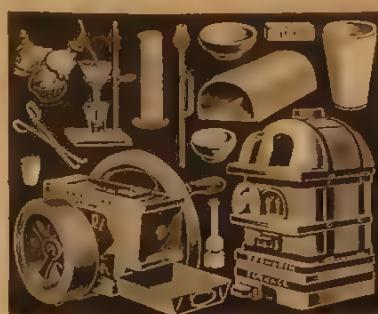
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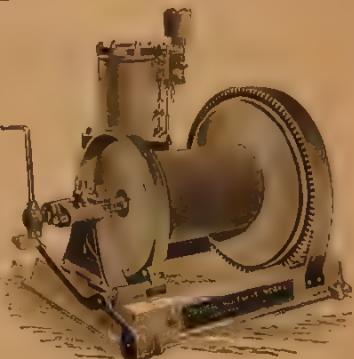
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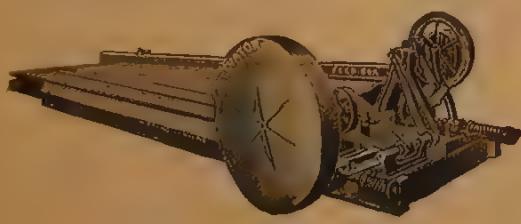
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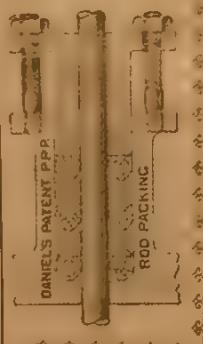
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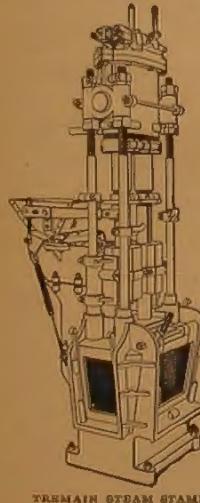
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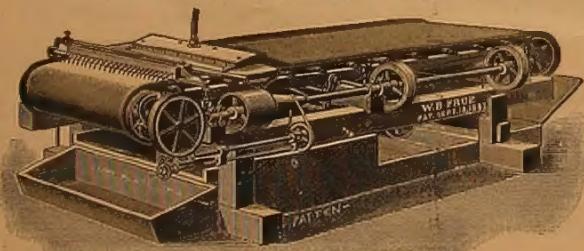
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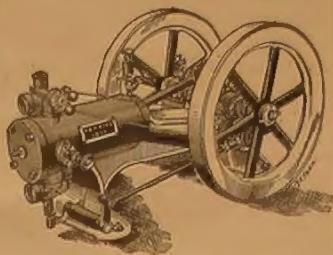
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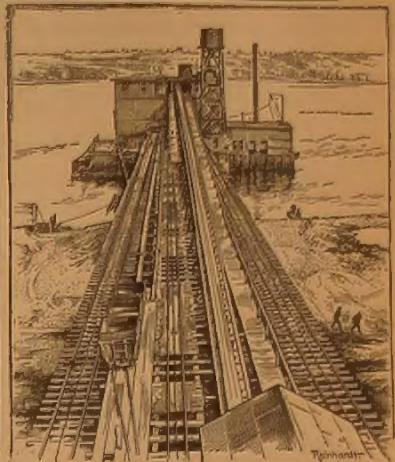
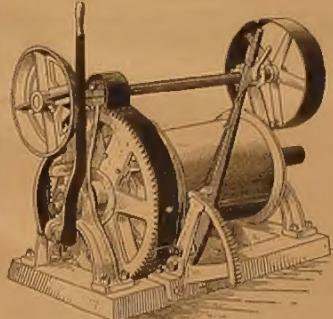


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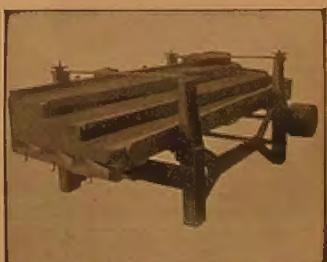
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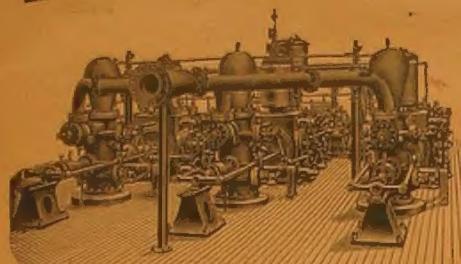
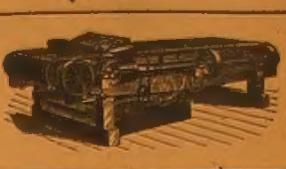
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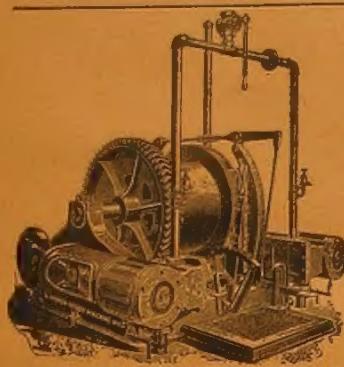
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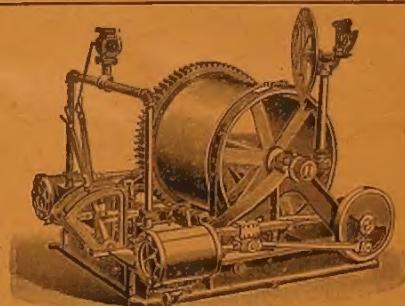
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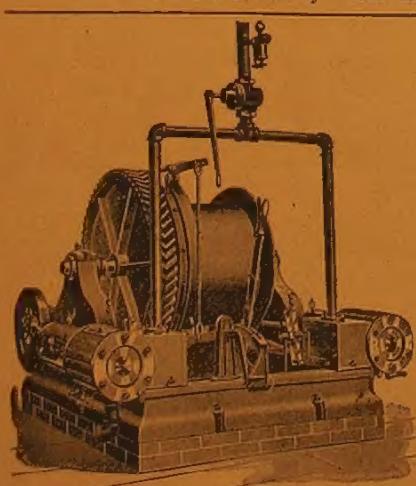
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